AUGUST 21, 1995 VOLUME 12, NUMBER 34

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

READY TO ROLL?

A flood of Web and ATM products are hitting the market. Page 32.

Win95 wins 'em over

Microsoft OS pleases early adopters with stability and flexibility.

By Peggy Watt

The Windows 95 hoopla will peak this week when Microsoft Corp. finally releases the oft-delayed successor to Windows 3.1, but it will be old news for scores of pioneers that have already deployed the operating environment across their networks.

Participants in Microsoft's Early Migration Program had few complaints and no apparent crises but do have a few common-sensible tips for the multitudes (see graphic, page 57).

Curtis Olliff, systems and network coordinator at Alameda Ambulatory Care Services in Oakland, Calif., has deployed 35 Windows 95 desktops on a three-server Windows NT LAN without significant incident. In fact, he was confident enough of the program's ease of use to let his more experienced users install and configure Windows 95 themselves.

Olliff had successfully installed a handful of desktops using a beta version of Microsoft's Systems Management Server (SMS) 1.1, which sent Windows 95 out from the server to workstations en masse. But for the others, he opted to put a Windows 95 CD-ROM into a subdirectory of his server and install the operating system on a workstation-by-workstation basis to better meet individual end-user needs.

End users could tailor their configurations, such as installing the multimedia functions if their systems could support enhanced sound and video, or choose

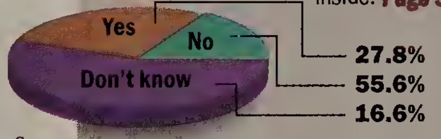
See Win95, *page 57*

More Win95 coverage

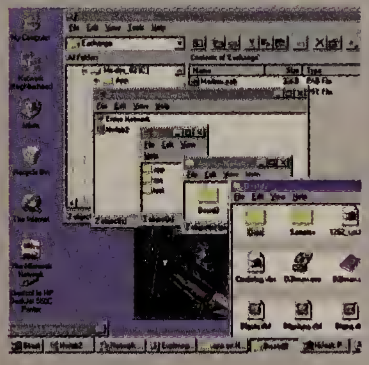
Microsoft's *Jeff Thiel... big Win95 payback. Page 40.*

CHRIS BENNION

- **The survey says...** Over one-quarter of users asked plan to use the Exchange E-mail client when Windows 95 starts shipping. More results inside. **Page 57.**



- **Upgrade costs** have some customers spooked, but the long-term savings make a compelling argument for Win95. **Page 40.**
- **Win95 packs a network punch;** can OS/2 Warp go the distance? The desktop OSs square off. **Page 43.**



AT&T partners to extend VPN into Europe

By David Rohde

Hoofddorp, Netherlands

AT&T and its European partners will announce in the next few weeks an International Virtual Private Network (IVPN) service that gives users a uniform billing platform and common network management, dialing schemes and routing control features.

Uniworld's Foster *says Ericsson switches are being used in its four European members' countries.*

The service, which will span some 18 countries, is slated to be launched in early October in Geneva at Telecom '95, the quadrennial global telecommunications convention. It will be offered under the auspices of

See IVPN, *page 58*

IBM big iron prepped for TCP/IP traffic duty

Moving beyond SNA, Big Blue is revamping VTAM to play larger role in managing data in multivendor shops.

By Michael Cooney

Orlando

IBM is developing new features for VTAM that could turn some 50,000 mainframes into more effective hubs for enterprisewide client/server computing.

IBM intends to add TCP/IP features to VTAM, the central communications software on the mainframe, enabling it to control multivendor traffic, officials told users gathered here for the Share, Inc. IBM user group meeting. VTAM will also be enhanced to improve net throughput and availability.

According to IBM, VTAM is installed on over 90% of its mainframes around the world. And although the software is most closely associated with controlling legacy Systems Network Architecture nets, IBM is looking to dramatically expand its scope and play a larger part in managing the swelling volume of corporate TCP/IP traffic.

IBM's Nicholas Donofrlo *says integrating client/server and distributed systems is key.*

While many have predicted the death of the mainframe, the big iron has shown surprising resilience, a situation IBM hopes to exploit.

"There is over $1 trillion worth of software on the System/

See VTAM, *page 58*

Spectrum piles on third-party apps

By Jim Duffy

Rochester, N.H.

Cabletron Systems, Inc. this week will move to bolster the systems management capabilities of its Spectrum platform by announcing new development partners and applications.

According to sources, Cabletron will address systems management in its broadest sense with products for database, applications, printer and administration management. In doing so, the company hopes to dispel the notion that Spectrum is merely a manager of Cabletron hubs, a perception that dogs the company even though many analysts say Spectrum is technically superior to competitive management offerings.

New development partners to be unveiled this week include Gradient Technologies, Inc., OpenVision and Tivoli Systems, Inc. The vendors will provide applications for software license and event management, among others, according to sources.

Separately, Coronet Systems and Unison Software confirmed that they are now Cabletron Spectrum partners. They will integrate their respective application management and job scheduling software with the platform.

Existing partners, such as Calypso Software Solution, Inc., Computer Associates International, Inc., Compuware Corp., Intelligent Communications Software GmbH, Metrix Corp., Software Professionals and Syllogic BV, will release new configuration, database, accounting, software distribution and printer management products. These offerings will provide varying levels of integration with Spectrum, including its knowledge base.

"This is the first enterprise management offering that we're seeing from a nonsystems ven-

See Spectrum, *page 56*

NEW SPECTRUM PARTNERS

- Coronet Systems
- Gradient
- OpenVision
- Tivoli
- Unison

Banyan E-mail takes its cues from Exchange

By Kevin Fogarty

Westborough, Mass.

Banyan Systems, Inc. will crash the client/server messaging party early next year with a new E-mail product that not only mimics the top features of Microsoft Corp.'s Exchange, but also supports Banyan's StreetTalk directory.

BeyondMail 3.0, which is due in the first quarter of next year, will support Microsoft's Messaging Application Programming Interface (MAPI) and include a new server-based rules engine, shared mailbox access and enhanced forms-based workflow. It will also boast a Visual Basic-like forms-building tool and the ability to automatically sort messages within a folder, according to sources briefed on the product.

BeyondMail's new features and ship date make it one of a growing number of products set to compete in the groupware space. Microsoft's Exchange and Lotus Development Corp.'s Notes 4.0, both due this year, and

See Banyan, *page 57*

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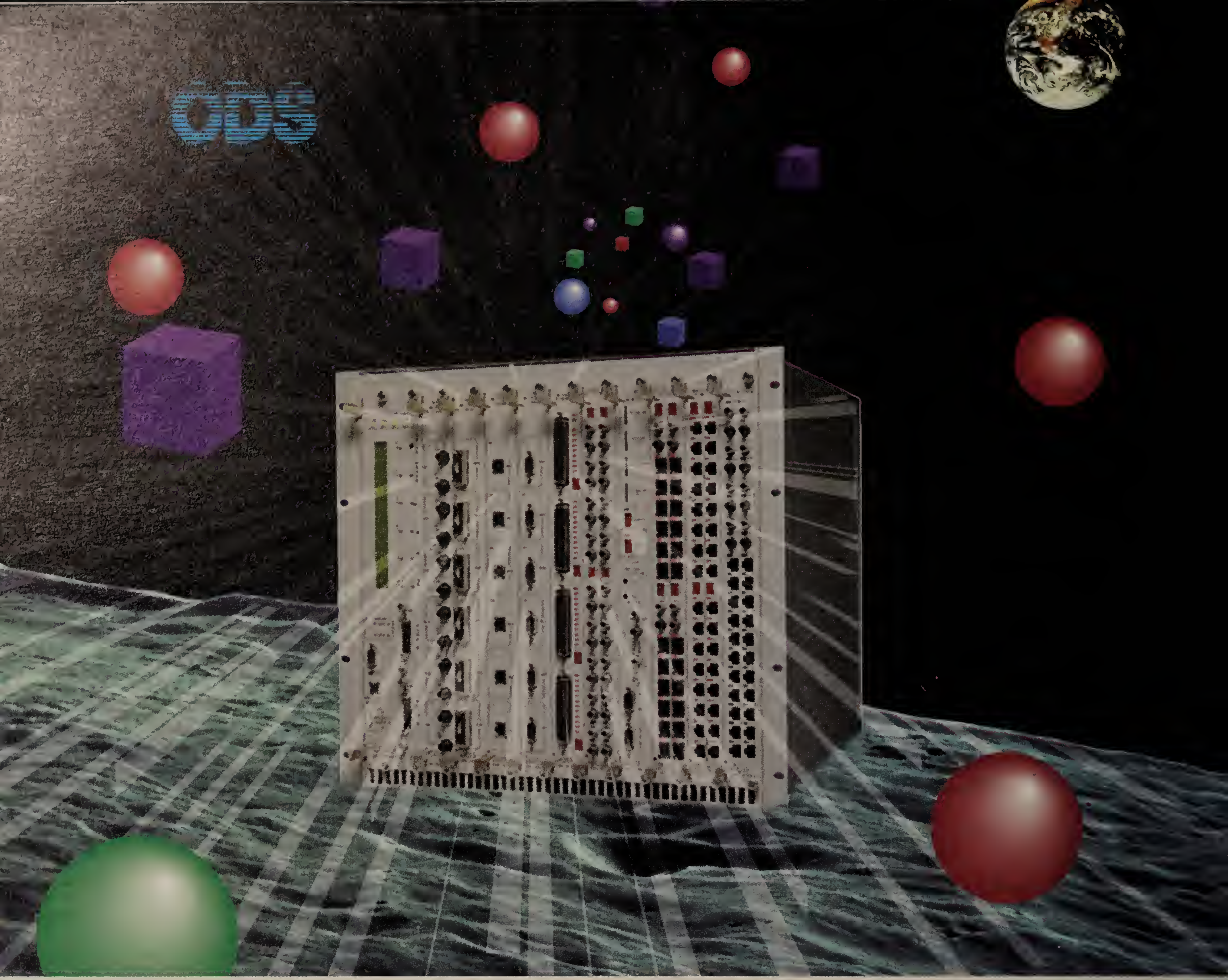

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Briefs, August 21, 1995

Microsoft touts free router beta

■ Users can obtain free beta copies of Microsoft Corp.'s Windows NT Server Multi-Protocol Routing (MPR), a software router that enables LAN-to-LAN connectivity at a lower cost (and functionality) than a dedicated router. MPR supports both TCP/IP and IPX/SPX protocols, accommodating NetWare LANs in addition to Windows NT's built-in support for remote users, TCP/IP and AppleTalk. Users can download MPR from Microsoft's CompuServe forums or Web site.

Money smarts

■ MasterCard International, Inc. last week said it has formed a company called Smartcash in conjunction with 11 banks that will provide computer-based cash cards. The cards will store money from automated teller machines or through special phones.

The greatest story ever toll

■ AT&T next month will begin a campaign to educate the public about the new 888 toll-free area code, slated to go into effect early next year. Among AT&T's gimmicks will be a Toll-Free Day where the carrier will pay motorists' bridge, tunnel and road tolls in big cities and provide handouts promoting 888. AT&T will stress that 888 numbers are neither better nor worse than 800 numbers and that their use is not related to the business status of the companies advertising them.

No faith in the 'Net

■ The Church of Scientology and U.S. federal marshals in Virginia last week raided the Arlington home of Arnaldo Lerma, a former church member, to remove equipment and software Lerma allegedly used to post confidential church documents on the Internet. In what could be a precedent-setting case for the Internet, the Church of Scientology is also suing Lerma's Internet provider, Digital Gateway Systems, Inc.

A close one for electronic commerce

■ The burgeoning world of electronic commerce has one less legal headache to deal with now that the Federal Trade Commission has dropped its threat to regulate cyberspace transactions using laws designed to govern telemarketing. The FTC last week issued final regulations that, starting Jan. 1, will require telemarketers to "promptly" disclose that they are making a sales call in any contact they make with consumers. The final rules strictly define such sales transactions as outbound voice telephone calls. The FTC's original proposal had expanded the definition to include modem communications (*NW*, April 17, page 1).

Configuration complication

■ Turns out the bug users were reporting that kept Banyan Systems, Inc.'s newly shipped VINES 6.0 from working correctly with MailExpert — the rules engine from LANshark Systems, Inc.'s SharkMail product (*NW*, Aug. 14, page 8) — had nothing to do with the VINES code itself. Rather, a configuration issue was causing the problem. Users should configure the mail service as follows:

MSERVICE MS@Servername@Servers
Select CONTROL the service from the menu
Select SPECIFY EVENT MASK LEVEL
Set the level to 3

NetworkWorld
An IDG Publication

Contents

NSA Special Assistant Clint Brooks says software-based key-escrow encryption systems are not as secure as hardware-based ones. Page 8.

News

6 **Aspect Telecommunications introduces** Windows application for building virtual call centers.

6 **AT&T does an about-face** with Internet access service but may arrive too late for the party.

8 **Micom fires up** frame relay support for its muxes and routers, offering users possible cost savings.

12 **Microsoft announces** plans to add workflow extensions to its Messaging Application Programming Interface.

12 **Tivoli bolsters** automation features in revised systems management tool.

WANs & Internetworking

13 **AT&T offers ISDN** network customers packet data switching capabilities.

13 **Livingston dials up** Internet with new router and communications server.

13 **AT&T justifies** its snub of NNI with cost analysis but fails to allay user and analyst skepticism.

SPECIAL FOCUS

Phone competition

Banging your head against the wall looking for an RBOC alternative? Take heart — so are the long-distance carriers. Page 20.

Local Networks

25 **Recent test of switches** shows vendors are closing the gap on market leader LANNET with their 10M/100M bit/sec Ethernet offerings.

25 **Bay Networks adds Ethernet** to the Centillion switching mix.

25 **3Com adds** inverse muxing capability to digital modems for improved remote LAN access.

Client/Server Applications

29 **Groupware consultant** takes industry's temperature and looks at what's ahead.

32 **Object Request Broker** vendors rally around interoperability spec at Object World.

32 **Micro Focus targets** Windows 95 developers with new tool kit.

Electronic Commerce

35 **Lower prices are in store** for Web merchants as credit card leaders back new security savings plan.

Technology Update

37 **High Performance Routing creates** a smooth path for data transfers.

Management Strategies

46 **Periodic pulse checks** help keep networks under control.

Opinions

17 **Scott Bradner** rips at telecom bill casing, finds mishmash and uncertainty inside.

28 **Melinda Le Baron and Skip MacAskill** get up to speed on FDDI switching.

29 **Mike Rothman** argues against waiting for the next technology messiah.

35 **Mark Gibbs'** plumber demonstrates the mainstreaming of networking.

38 **Editorial:** As with all decisions, use caution when choosing whether or not to upgrade to Windows 95.

38 **Linda Musthaler** bypasses the hype and finds Windows 95 to indeed be a "Very Good Thing" for network managers.

59 **Back to Reality:** Phone number changes are wasting time and forcing users into needless complexity.

59 **Abend:** A compilation of on-line oddities.

888...310...
404...562...
770...800...310...

Network Help Desk. *Page 37.*

In-Box. Letters from our readers. *Page 39.*

Editorial and advertiser indexes. *Page 55.*

NetworkWorld's *Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.*

Windows app builds virtual call centers

By David Rohde
San Jose, Calif.

Ever wish you could let your company's most expert employees answer calls to your 800 lines that are now handled by call center agents?

A new Windows application being introduced today by Aspect Telecommunications, Inc., combined with computer-telephone integration (CTI) technology and WAN links to an automatic call distributor (ACD), will let you do just that.

Aspect's WinSet for Windows is PC software that reproduces through a graphical user interface the functions of Aspect's TeleSet call center phone set. The software can be provided to employees outside the call center — dubbed "anywhere agents" by Aspect — who are equipped with either a stand-alone PC or an Ethernet-attached PC.

These employees can be telecommuters, remote office workers or even high-level employees who have specific fields of expertise.

"You get full functionality from an agent perspective as if you were sitting in the call center," said Bart Stanco, vice president of Gartner Group, Inc., a market research firm in Stamford, Conn.

Blue Cross and Blue Shield of Kansas City already uses WinSet for Windows to route certain calls to physicians located in a remote pediatric clinic and a remote urgent-care center, both operated by the Blue Cross subsidiary TriSource Health Care, Inc.

And Tiger Direct, Inc., a Miami direct-mail hardware and software marketer, also routes calls to remote agents, such as telecommuters, to meet the spikes in calling volume that are typical of such a business.

"Calls can be directed to the best qualified agent, whether that person sits in our call center or in a den at home," said Patrick Fiorentino, Tiger Direct's executive vice president.

WinSet for Windows requires the Aspect ACD to be fitted with the vendor's new AgentAccess Integrated Applications Module (IAM), which includes an Ethernet network interface card to connect with an on-site LAN to handle access by the remote agent's PC.

As a result, the total solution is not cheap (see graphic). But it enables remote locations that cannot justify the purchase of an ACD, which can cost hundreds of thousands of dollars, to be pulled into a virtual call center.

When a call comes in, a remote interface card (RIC) within the ACD dials out over a T-1 line to a remote agent's telephone.

Simultaneously, the remote agent's PC connects with the on-site LAN over TCP/IP, utilizing customer-provided network access devices.

Within the ACD, an RS-232 connection links the IAM and the RIC cards to synchronize the datastreams and voicestreams. At the remote agent's site, CTI software containing Microsoft Corp.'s Telephony Application Programming Interface performs a similar function.

Stand-alone remote agents require either two analog telephone lines — one for the voicestream and one for the datastream — or an ISDN Basic Rate Interface utilizing the two bearer channels simultaneously.

For agents sitting on their own Ethernet in a remote location, WinSet commands entered on-screen can travel over an enterprise internetwork back to the ACD.

For example, the TriSource pediatric clinic is a node on Blue Cross' frame relay network, and the physicians' transactions with callers entered through the WinSet software go back to the ACD over a 56K bit/sec permanent virtual circuit.

In each type of configuration, the effect is that once a remote agent is logged on to the ACD, the call center supervisor can route calls to the agent and track his work in real time.

©Aspect: (408) 441-2000.

PRICING FOR ASPECT'S WINSET FOR WINDOWS

Number of remote call center agents	Cost per agent with vendor-supplied server	Cost per agent with user-supplied server
16	$2,741	$1,994
32	$2,211	$1,838
48	$2,035	$1,786

In both configurations, the vendor supplies the remote interface cards (RIC) for the automatic call distributor, the client software and a system license. If supplied by the user, the remote access server requires a Pentium processor with an RS-232 data link to each RIC card.

Multiplexing

Ascom Timeplex offers customers trade-in deal

By Tim Greene
Woodcliff Lake, N.J.

Ascom Timeplex, Inc. is offering a trade-in deal to lure rivals' customers over to its Synchrony multiplexer product line.

The actual trade-in terms are individually negotiated, but the company will basically buy out existing time-division multiplexer (TDM) hardware for customers that want to install Synchrony products.

According to Chris Andreton, Ascom Timeplex director of North American marketing, the company will give customers the value they are carrying on their books for the equipment. Ascom Timeplex is targeting products from General DataComm, Inc., Network Equipment Technologies, Inc., Newbridge Networks, Inc., Racal-Datacom, Inc. and StrataCom, Inc.

"This is a cute idea," said Tom Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He said it could attract users with aging T-1 muxes. The buyout offer might prompt some users that were thinking of upgrading in a year or two to do so sooner, he said.

Express Switching

The Synchrony platform uses a feature called Express Switching to combine frame switching for LAN traffic with TDM-based bandwidth management features for circuit-switched traffic such as voice, video and legacy data protocols.

This hybrid approach mixes frame and TDM traffic over T-1 lines. The two Synchrony models, the ST-50 and ST-1000, based on the same chassis, have a capacity of 160M bit/sec and can support as many as 31 T-1/E-1 ports. Lower speed user ports can be configured across 60 slots using expansion shelves.

Curtis Price, an analyst with International Data Corp. in Framingham, Mass., said Ascom Timeplex is counting on Synchrony to regain lost market share but it might be an uphill battle. "Mux users are loyal," he said. ■

AT&T long on 'Net promises, short on details

Established on-line service providers may not let AT&T play their Internet savings games.

By Ellen Messmer
New York, N.Y.

AT&T last week said it will start providing Internet services to business and residential customers, but with no clear timetable in place, analysts were skeptical that the carrier can easily muscle its way into this market.

Under the banner of new division WorldNet Services, AT&T plans to mass market Internet dial-up access and its own brand of Netscape Communications Corp. Web browsers to millions of consumers. For large business users, the long-distance giant will build secured private IP networks as well as Web pages on the public Internet.

The decision to jump on the Internet bandwagon marks an about-face for AT&T, which, over the years, has viewed the 'Net as a wild, unmanaged data network that business would never trust.

But with rivals Sprint Corp., MCI Communications Corp. and the Bell companies now offering Internet business services, AT&T is compelled to join in or be left further behind.

While AT&T's huge customer base and marketing clout give the carrier an enviable potential to win over new Internet customers, the carrier does not yet possess an extensive IP router net.

Measuring the Internet market

Communications (Internet and other on-line services):	$3.0 billion
Infrastructure (servers, gateways, routers, firewalls):	$2.0 billion
Applications (client and server software):	$200.0 million
Content (information, image, music, video, marketing):	$10.0 million
Services (consulting, integration, hosting home pages):	$2.5 million

IP expansion

Tom Evslin, WorldNet vice president, acknowledged that through the recent deal with BBN Planet, Inc., AT&T has outsourced its IP service for now but said it plans to build 200 IP router points-of-presence nationwide.

Some analysts doubt that AT&T can easily grab market share from established Internet providers.

"Neither AT&T nor BBN is part of that club of six — the Internet providers that have peering and transit agreements to exchange IP traffic at major connection points at no cost to each other," according to Gordon Cook, publisher of the Trenton, N.J.-based "Cook Report" on the Internet.

The inside club comprises MCI, Sprint, ANS CO+RE Services, Inc., Performance Systems International, Inc., UUNET, Inc. and Net99, Inc. "AT&T is pitifully late to the party, and it remains to be seen if they will let AT&T be member number seven," Cook added.

Added Steve Franco, data communications analyst at Boston-based consultancy The Yankee Group, "AT&T has realized the Internet is a greater phenomenon than they first thought."

Although now way behind, AT&T has the long lease lines and frame relay services in place that will serve as a foundation for adding IP routers for Internet service, Franco noted.

AT&T will link its NetWare Connect and Notes services to the Internet, plus help businesses set up Web pages and billing mechanisms to further electronic commerce.

AT&T will also work closely with its 800-number customers to help them establish an Internet presence by registering 800 numbers as Internet domain names and setting up Web sites tied to back-end databases for handling billing and processing of information, said John Trujillo, president of AT&T business communications.

To prevent Web bottlenecks, AT&T will install intelligent proxy servers that automatically transfer Web users to alternate sites when congestion occurs. ■

COMMENTS?
See "How to reach us" on the Opinions pages.

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UB must take key steps to remain competitive

Analysts stress the need for the company to articulate its switched LAN migration strategy or suffer consequences.

By Jodi Cohen

As traditional hub vendors continue to fall prey to the top internetworking players, industry observers said now is a crucial time for determining the future of UB Networks, Inc.

3Com Corp.'s acquisition of Chipcom Corp. last month is the most recent example of a mid-tier network equipment vendor being swallowed up by a billion-dollar company aiming to provide users with one-stop shopping. Many analysts said that UB, which last year posted $375 million in revenue, must take immediate steps to compete effectively in this consolidating market or risk being left behind.

UB, which is owned by Tandem Computers, Inc., lost its premier networking vendor status it enjoyed in the 1980s when the company chose to focus on high-end customers at a time when the market grew much more rapidly through sales to midsize companies.

UB has spent the last few years trying to reposition itself for growth. Under the direction of Roel Pieper, UB's president and chief executive officer, the company has rolled out GeoRim LAN switches, GeoSwitch Asynchronous Transfer Mode switches and the GeoLAN ATM switching hub — and has even posted seven consecutive profitable quarters.

While UB slipped from the top tier of networking providers, the company still has an installed base of 60,000 Access/One modular hubs. That is not so far behind market leader Cabletron Systems, Inc., which has about 85,000 Multi Media Access Center chassis-based hubs installed.

But many analysts said that UB's large customer base should be cautious about buying new UB products until the company better outlines its vision for migrating users from shared media LANs to switched ones.

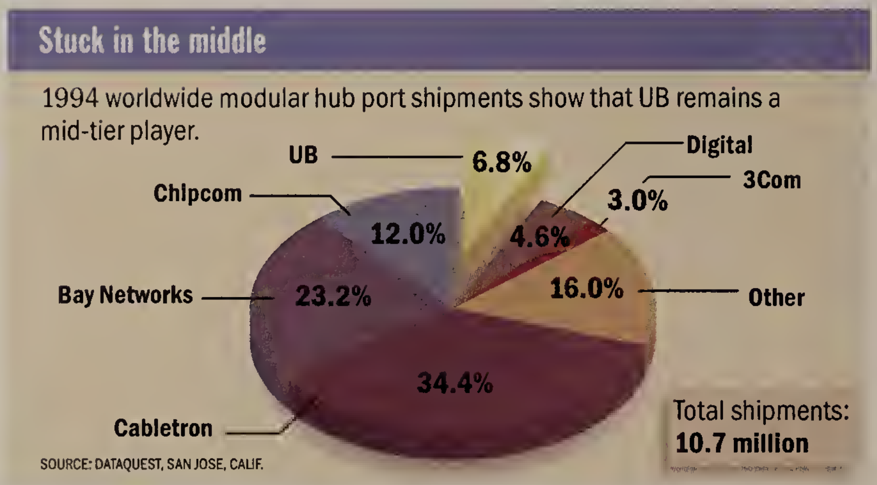
"UB needs to especially address how to enable scalability of the existing protocols in a switched network — whether it be ATM or LAN switching," according to Tom Baine, an analyst at META Group, Inc. in Reston, Va.

Melissa Morales, an analyst at Datapro Information Services Group, a consultancy in Delran, N.J., said UB needs a migration strategy.

"If [UB] thinks it's going to be a major player again, they need to come out with a strategy to show the industry how they intend to take their customers to virtual LANs and switching," she said.

But UB Vice President of Marketing Doug Wheeler said, "If there are Access/One customers unclear about what their next-generation technology is, I would be shocked."

But Wheeler admitted that he would like to see UB update its Virtual Networking Architecture, which was announced two years ago, and follow that by airing a migration strategy this fall.


Stuck in the middle

1994 worldwide modular hub port shipments show that UB remains a mid-tier player.

SOURCE: DATAQUEST, SAN JOSE, CALIF.

On the virtual networking front, Wheeler said UB plans to leverage its Empower network management platform and the application engine that runs on top of it to set up and administer virtual LANs and provide policy-based management.

"UB will focus on what type of security is offered by virtual networking, the level of network performance and location independence," Wheeler said. "We are also looking at how VLANs will span across a routed network, which we'll partner with Cisco [Systems, Inc.] for."

Even if UB takes these steps, some analysts said it will be too little, too late.

"I don't care if UB's got a switch with zero latency and 1 billion packet/sec being forwarded — and I don't care if they give it to me for free," Morales said. "I wouldn't [take] it because UB may not be around in a few years."

Wheeler conceded that many analysts are uncomfortable with UB's position in the market. He attributed this to the company's strong service and support integration capabilities, which makes UB appear as a systems integrator rather than a network equipment player. ■

Micom adds frame relay to multiplexer and router lines

By Tim Greene

Simi Valley, Calif.

Micom Communications Corp. last week indulged in a frame relay free-for-all, introducing support for the fast-packet technology on a new concentrator as well as on its existing multiplexer and router lines.

The new FrameRunner WAN concentrator, updated Marathon and Stadia multiplexers, and enhanced NetRunner routers will let users piggyback voice and fax traffic onto public frame relay links, offering them possible cost savings by using fewer private lines.

FrameRunner acts as a T-1 concentrator between a public frame relay network and Micom muxes and routers. The product comes in four- and eight-port models, and costs $6,500 and $8,500, respectively.

Marathon and NetRunner support up to eight 19.2K bit/sec links, or as many as two 128K bit/sec links or one T-1. They both support a maximum of two LAN ports on the user side.

Micom's Stadia DVI Hub is a headquarters multiplexer that supports up to 18 56K bit/sec links, as many as 42 19.2K bit/sec links or up to four T-1 links.

The frame relay software enhancement does not change the prices of the Micom products, and installed systems cost between $250 and $2,500 for an upgrade.

Users with frame relay networks and significant voice telephone traffic between sites can save money by sending voice over frame relay, said Christine Heckart, a senior consultant at TeleChoice, Inc. in Verona, N.J. "If the [frame relay] network is justified for data, then the voice can ride for free," she said.

Eric Madsen, president of Drive Train Distributors, Inc. in Anchorage, Alaska, said he is saving $1,000 a month on voice calls by sending them over his three-Marathon frame relay network. The total monthly bill for the frame relay links is $1,700, he noted.

According to Madsen, the voice quality is a little staticky but still better than a general voice call when he arrived in Alaska 20 years ago.

He recommended that users check out the quality of their carrier's network before adopting voice over frame relay.

©Micom: (805) 583-8600.

CORRECTIONS

Due to a production error, the Network Management Application Buyer's Guide chart in our Aug. 7 issue did not contain information for AT&T Global Information Solutions' OneVision product.

OneVision can run on top of popular network management platforms, including Hewlett-Packard Co.'s OpenView and Cabletron Systems, Inc.'s Spectrum, or as a stand-alone management workstation under Unix and Windows NT. It performs accounting, configuration, fault, performance and security management functions, and can integrate data from multiple element management systems and net management platforms. OneVision has an autodiscovery feature and can be operated from a graphical or command-line interface.

Management protocols supported include the Common Management Information Protocol and Simple Network Management Protocol Versions 1 and 2. Its platform price is $15,000.

Pricing for Seagate Enterprise Management Software's Seagate LANAlert was also omitted. The cost per client is $595 to $30,000; platform modules cost between $995 and $9,995; and the per-server price is $795 to $49,500.

Encryption standards

White House unlocks its key-escrow policy

By Ellen Messmer

Washington, D.C.

The Clinton administration last week outlined a plan that will eliminate export restrictions on encryption software, as long as the government has a way to get the decryption key through a third party when needed.

WALTER CALLAHAN

NSA's *Brooks says the government's efforts are directed toward the export of software.*

Mike Nelson, White House aide to Vice President Al Gore, said export restrictions will be lifted on 64-bit encryption software that uses a process called key escrow. With this method, a copy of the key is stored with trusted agents that are certified rather than held by the government.

Businesses, especially banks, have objected to the idea of the government holding users' encryption keys, calling it a security risk, while privacy rights advocates have said that users' privacy is violated.

Bankers Trust Co. has offered one third-party key-escrow database storage method, while Trusted Information Systems, Inc. and National Semiconductor Corp. have proposed another.

Ray Kammer, deputy director of the National Institute of Standards and Technology, said the government does not intend to select a single system, but plans to put forward specific guidelines early next month that industry can follow to build products.

"All of this is directed toward export of software," said NSA Special Assistant Clint Brooks. The NSA continues to believe that software-based key-escrow encryption systems are not as secure as hardware-based encryption, he said.

While Northern Telecom, Inc. last week expressed support for the administration's plan and Hewlett-Packard Co. said it will soon announce key-escrow products designed to meet the export guidelines, users of the technology were not swayed.

"We are against key escrow when it comes to any type of payment authorizations, transfer of securities or stocks," said Kawika Daguio, an American Bankers Association representative. ■

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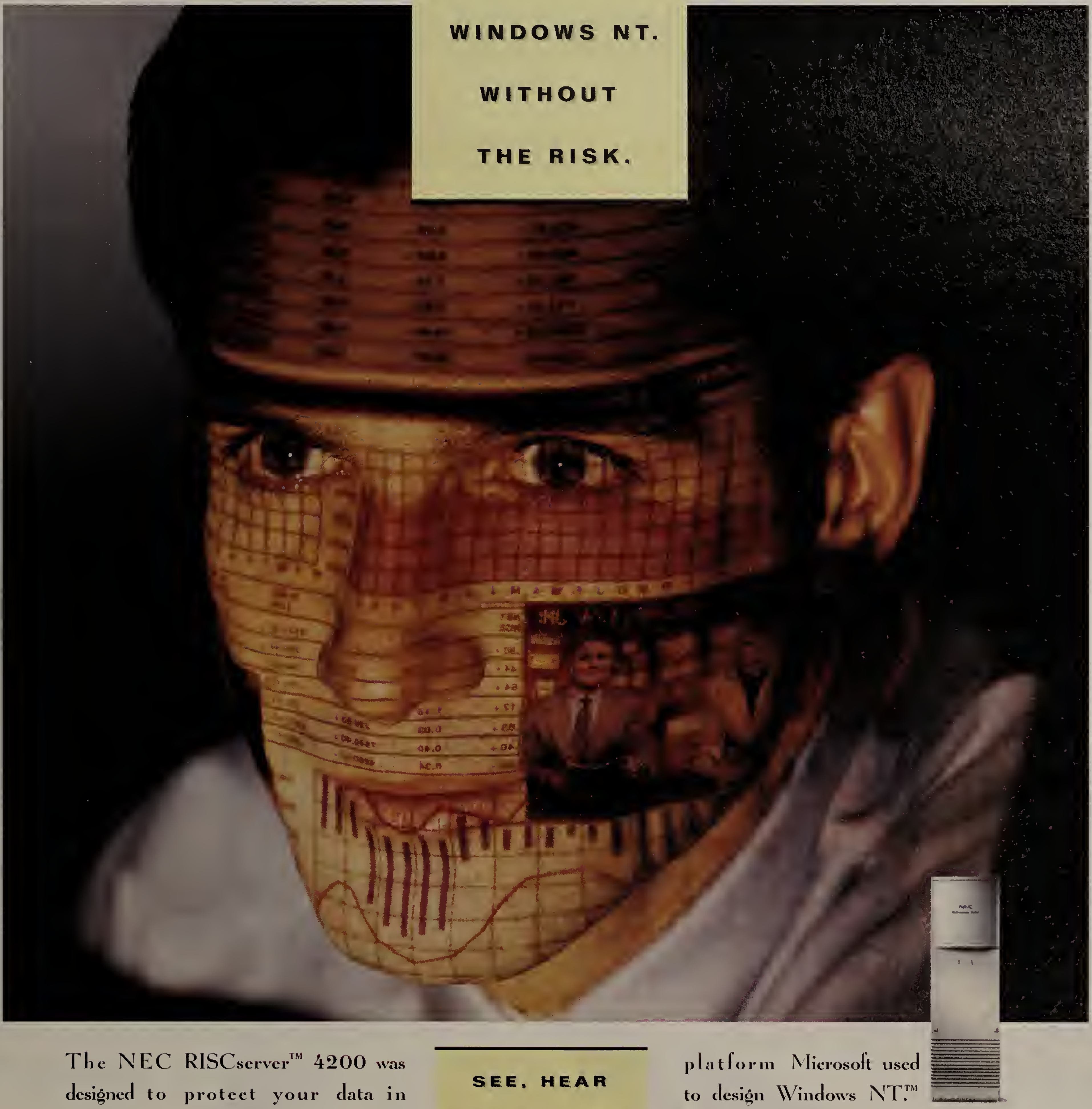

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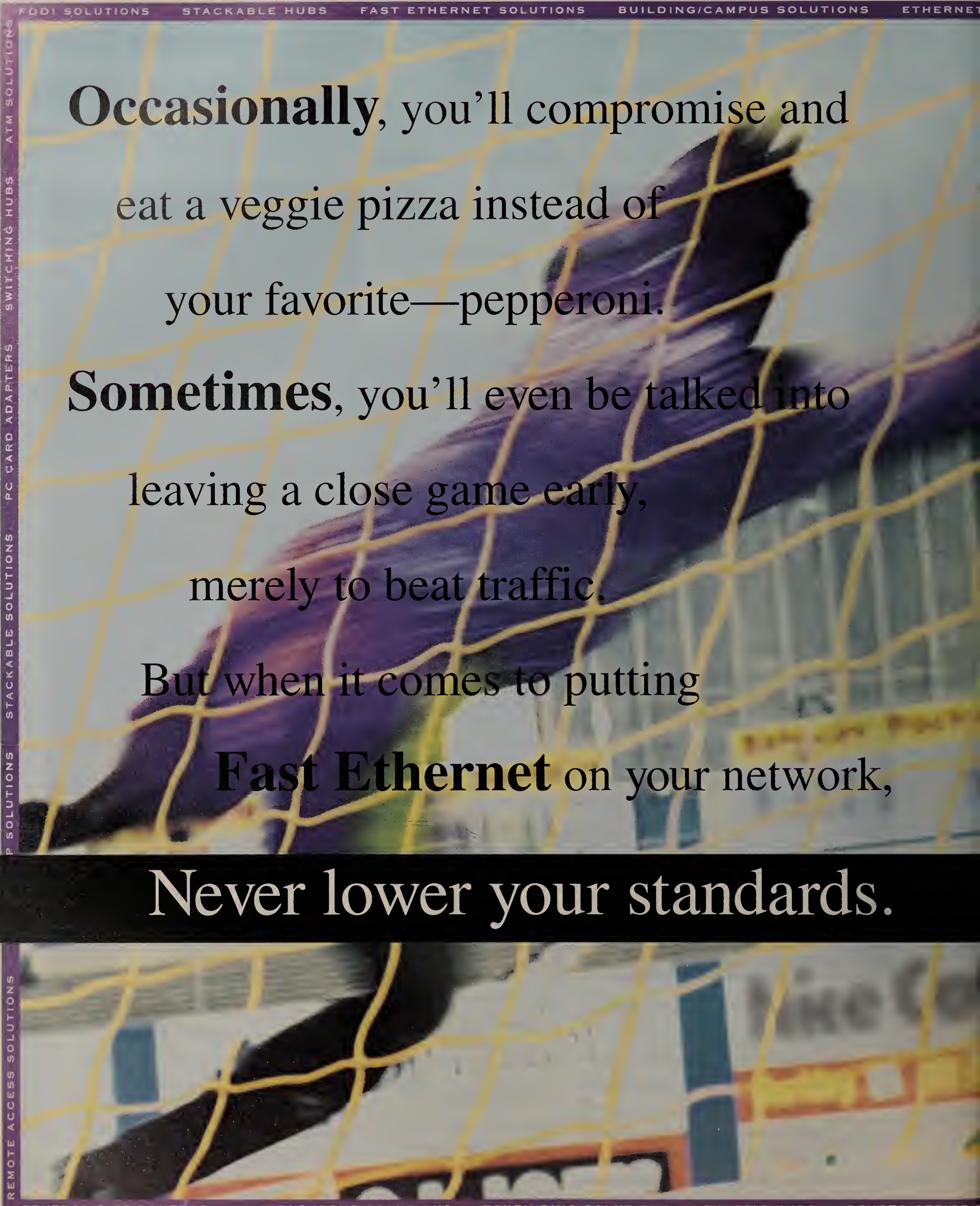

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leaving a close game early,

merely to beat traffic.

But when it comes to putting

Fast Ethernet on your network,

Never lower your standards.

CENTRAL SITE ROUTERS WAN BACKBONE SOLUTIONS TOKEN RING SOLUTIONS CHASSIS HUBS REMOTE OFFICE

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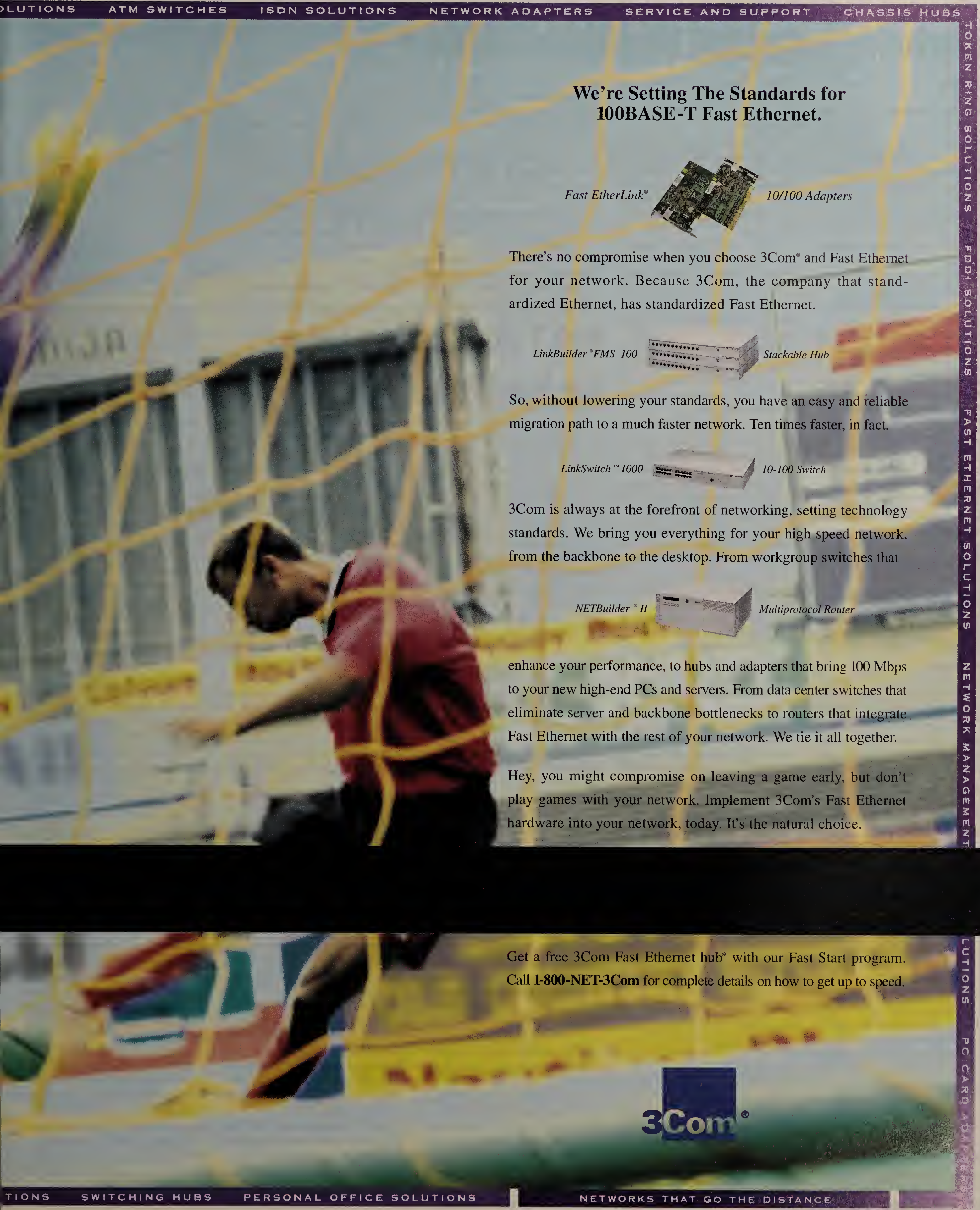

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NETWORKS THAT GO THE DISTANCE

Newbridge muxes embrace ISDN

By Tim Greene
Herndon, Va.

Newbridge Networks, Inc. last week upgraded its T-1 and T-3 multiplexers to support ISDN, offering users bandwidth flexibility and possible economies by reducing the need for private lines.

The company says the ISDN support in its 3600 and 3642 MainStreet Bandwidth Managers enables users to back up private lines and add network bandwidth during peak demand or for occasional-use high-demand applications, such as videoconferencing, that do not warrant dedicated circuits.

The 3600 MainStreet is a modular T-1 mux that supports as many as 32 T-1 interfaces, while the 3645 supports as many as 256 T-1/E-1 interfaces or eight T-3s.

The ISDN support requires use of Release 6 software, which supports four- or eight-port Basic Rate Interface ISDN interfaces or a two-port Primary Rate Interface ISDN interface.

The new ISDN card, combined with MainStreet's current capability to support frame relay traffic, allows remote sites to access frame relay backbones over ISDN access links, Newbridge said.

"ISDN tariffs are very attractive, and this makes sense as a backup and for sites that need only fractional T-1, said Curtis Price, an analyst for International Data Corp. in Framingham, Mass.

It also gives users a backup capability without having to invest in a separate ISDN access device, according to Tom Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J.

Another enhancement in Release 6 is elimination of the need to compress and decompress voice signals traveling over tandem hops.

When compressed voice calls are tandemed through private branch exchanges, they are typically decompressed then recompressed for the next hop. Release 6 recognizes a compressed call and forwards it without decompressing and recompressing, improving the end-to-end quality of the transmission.

For MainStreet users with installed Release 5 hardware, the price to upgrade to Release 6 depends on configuration but ranges upward from $5,200 per node.

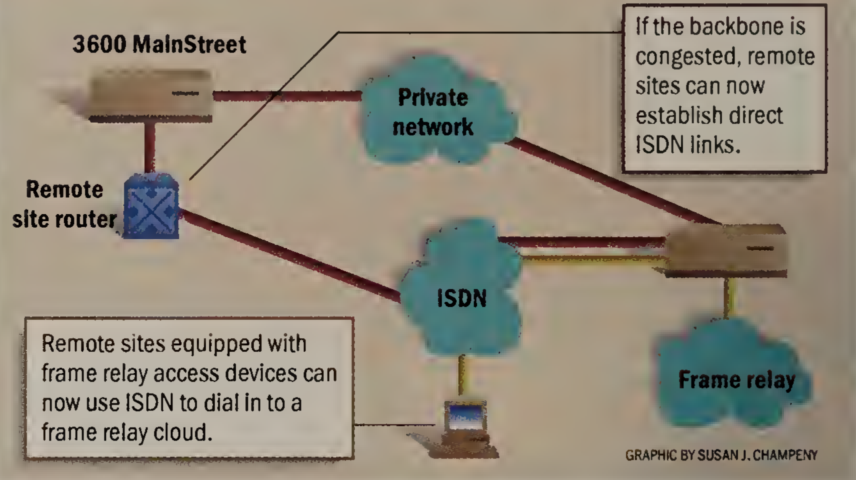
The price for the new releases depends on application and configuration but ranges from $10,000 to $60,000 for a 3600, and as much as $200,000 for a 3645.

The devices are being field trialed. General availability is scheduled for the fourth quarter.

©Newbridge: (703) 834-3600.

ISDN options

New ISDN support gives Newbridge 3600 users added network flexibility.



If the backbone is congested, remote sites can now establish direct ISDN links.

Remote sites equipped with frame relay access devices can now use ISDN to dial in to a frame relay cloud.

GRAPHIC BY SUSAN J. CHAMPENY

NeXT distributes objects for the Web, OLE apps

By Ellen Messmer
Redwood City, Calif.

NeXT Computer, Inc. last week unveiled a software library of objects that will let programmers write World-Wide Web applications that can be linked to back-end object-oriented client/server systems.

Also, the company claimed it would beat Microsoft Corp. to market by shipping distributed OLE technology by the end of this year. Microsoft plans to ship its distributed OLE in 1996 or 1997, while the OpenDoc consortium should have a distributed OLE-compatible system out this year.

NeXT intends to ship by year-end an extension of its current OLE object environment. Called Distributed OLE for Windows, the set of software tools will let programmers develop Windows applications that can message OpenStep objects across a distributed network of Unix platforms from Digital Equipment Corp., SunSoft, Inc. Solaris, Hewlett-Packard Co., as well as Windows NT.

The Web tool set, which is scheduled to ship early next year, includes a range of calendar, scheduling, catalog, inventory and credit card authorization objects to build electronic commerce Web sites without having to use perl scripts or the Common Gateway Interface language.

Web data sharing

NeXT's Web server objects can also communicate with Microsoft's OLE and industry-standard Common Object Request Broker Architecture (CORBA) objects, said John Landwehr, NeXT product manager, thus providing a way for Web data to be shared with any back-end database application or spreadsheet supporting these object standards.

"We see these Web objects being used in electronic commerce and internal IS applications," Landwehr said.

While NeXT's approach is in line with other developers that

See **NeXT,** ***page 56***

Microsoft to add workflow extensions to MAPI

By Barb Cole
Oakland, Calif.

Microsoft Corp. last week told fellow members of a workflow industry consortium that it is adding extensions to its Messaging Application Programming Interface (MAPI) to link messaging and workflow systems but vowed not to compete with the standards work being done by the group.

The 80-company organization, The Workflow Management Coalition, is expected to publish in November its own client API that defines how front-end applications access multiple workflow engines. Applications built to that specification will work with any workflow engine that supports the API.

Microsoft's MAPI Workflow Framework, on the other hand, will provide a set of extensions for routing work from desktop applications to workflow engines as MAPI messages, according to Steve Silverburg, program manager for the business systems division at Microsoft.

"There's currently no connection between messaging systems and workflow systems," Silverburg said. The MAPI Workflow Framework will enable users, for instance, to trigger production workflow systems from their MAPI-based electronic mail systems, he said.

Workflow software automates business processes, routes work through an organization and, with the help of a database, tracks the status of work in progress. Until recently, workflow was primarily used in departments or small workgroups, but analysts have predicted that the workflow market will explode during the next few years as firms begin to install workflow systems throughout their organizations. In addition, vendors of client/server applications, front-end development tools and databases have begun to roll out workflow capabilities in their products.

WHERE WORKFLOW NEEDS THE MOST WORK

1 Software reliability
2 Ease of use
3 Ability to handle exceptions
4 Interoperability standards
5 Vendor stability

Based on a survey of 225 IS professionals.

SOURCE: BIS STRATEGIC DECISIONS, NORWELL, MASS.

GRAPHIC BY TERRI MITCHELL

"The client API being developed by the coalition will be of interest to developers who wish to workflow-enable their applications but don't want to pick a winner in the workflow arena," said Bruce Silver, an analyst at BIS Strategic Decisions, a market research firm in Norwell, Mass. "But the more important standard — the one that defines how workflow systems are linked to messaging servers — will be set by Microsoft," he said.

Members of The Workflow Management Coalition, which include workflow vendors, database companies and applications vendors, said the MAPI extensions do not undermine the work of the consortium.

"Microsoft does not appear to be interested in creating standards that trample on the work of the coalition," said Tom Koulopoulos, principal of Delphi Consulting in Boston and vice chairman of the external relations committee for the coalition. "As long as they are coming forward and saying, 'Here's what we're doing, and we plan to publish it,' we're OK," he said. ■

Tivoli augments automation of mgmt. tool

By Jim Duffy
Austin, Texas

Tivoli Systems, Inc. last week unveiled a version of its systems management software that features enhanced automation capabilities.

Tivoli/Enterprise Console (T/EC) 2.5 is intended to reduce the amount of time users spend developing automation routines, enhance management of remote systems and enable cooperative management among multiple sites.

T/EC, which runs on Unix workstations and servers, is a centralized management station that collects, processes and initiates responses to system and network events.

The new capabilities are automated rules building, an automation engine and collaborative event routing.

The new rules builder provides a graphical environment and a set of more than 100 default rule templates that enable users to customize T/EC operation for their environments. Established rules enable the T/EC to recognize status conditions that either affect service levels and application performance or require systems maintenance operations such as a database backup, according to Tivoli.

The automated rules builder also reduces the time and training required by users to employ and maintain a set of systems management automation procedures, the company said.

Based on information in the rules builder templates, the new automation engine in T/EC 2.5 controls the dispatch and execution of management procedures

See **Tivoli,** ***page 56***

WANs & Internetworking

Covering: Network Architectures • Net Management • Mobile Computing
Local/Long-Distance Services • Routers • Muxes and other CPE

Briefs

■ *Long-distance carrier* **LCI International, Inc.** *last week introduced Simply Guaranteed, a term-contract calling plan under which the carrier* **guarantees not to raise rates.** *LCI noted that although the Big Three carriers offer discount term contracts, their rates often rise when the underlying tariffed rates rise.*

LCI: (800) 524-7258.

■ *Four key* **Unix vendors** *announced that they have licensed Data Connection, Ltd.'s SNA for Unix (SNAP-IX) software, a full-function* **SNA server stack** *that includes support for IBM's Advanced Peer-to-Peer Networking and dependent LU Requestor technology. AT&T, Hewlett-Packard Co., OpenConnect Systems, Inc. and Unisys Corp. will include SNAP-IX in upcoming server software products. APPN is IBM's peer networking technology, and dLUR lets existing 3270 devices participate in APPN nets.*

Data Connection: 44-181-366-1177.

■ **SunSoft, Inc.** *last week announced that its data backup software is now available on Intel Corp. X86 hardware.*

Version 4.1 of Solstice Backup enables Sun SPARC and 86 servers to provide **backup and recovery services** *for desktop PCs, Unix workstations and servers, and Novell, Inc. NetWare servers.*

Solstice Backup 4.1 for X86 servers will be available in September. A license supporting 10 clients costs $2,500.

SunSoft: (800) 786-7638.

■ **MCI Communications Corp.** *last week announced completion of two Synchronous Optical Network (SONET) rings on* **international gateways** *carrying traffic to Africa, Asia and Europe. The rings provide 50-msec restoration between MCI's international switching stations and cables that transmit traffic beneath the Atlantic and Pacific oceans.*

AT&T tunes up its ISDN PRI offerings

By Joanie Wexler and David Rohde
Basking Ridge, N.J.

Users of AT&T's ISDN Primary Rate Interface services last week got a new option that allows them to squeeze packet traffic onto their links.

The new option, dubbed Temporary Signaling Connections (TSC), enables the always-available D signaling channel on a PRI to be temporarily activated during a call to send packet data.

Since the D channel is always available, users can employ this method to avoid racking up charges on one of the remaining B channels or utilizing dedicated private lines for additional bandwidth.

The move was driven by administrators of private branch exchange systems wishing to make PBX features uniformly available across an entire virtual network, said Dick Slezak, AT&T's managing director of global switched digital services.

For example, telephone display sets at different locations linked by TSCs will show caller names and numbers as if all callers were served by a single PBX.

But ultimately, users will be able to do much more, such as verify credit card transactions, update inventory databases, exchange data with automated teller machines and send faxes in the middle of a phone call.

While AT&T officials hope manufacturers of data communications equipment will support the TSC capability, it currently works only in conjunction with AT&T's Definity PBXs (see graphic).

The ISDN standard has long specified packet switching in addition to signaling over PRI's 64K bit/sec D channel, alongside the voice and data circuit switching going on over the 23 B, or traffic-bearing, channels.

But this does not necessarily mean that each PRI carrier has implemented packet switching capabilities, according to Mark Langner, senior consultant at TeleChoice, Inc., a consultancy in Verona, N.J.

As many as 16 TSCs can be specified on a PRI link, each allowing 16 simultaneous user connections.

The 64K bit/sec capability of the D channel can handle such a level of traffic since many anticipated applications will not chew up many kilobytes of data. For example, "Signals from ATMs are a fairly low-volume set of information," Slezak said.

Included with each option are 25,000 packets of information per month. Per existing AT&T tariffs, PRI users today pay $416 on top of the variable tariffed charges for vanilla T-1 services, plus a $3,117-per-PRI installation fee.

For the new TSC options, users would pay yet another $300 a month per TSC option. An installation charge of $500 will be associated with each TSC, plus an $8 charge per 1,000 packets of information above and beyond the 25,000 included in the monthly fee.

Many D channels have been underutilized because, generally, they are used to set up a call, then they sit there, ripe for other transport, Langner said.

AT&T's Slezak added, "The clock is always running on a B channel, but the D channel is always there." ■

AT&T gear and services required

Temporary Signaling Connections requires at least two locations with ISDN PRIs that are:

- Equipped with AT&T Definity Generic 3 private branch exchanges, Versions 1, 2 or 3

And use one of the following AT&T services:

- Software-Defined Network
- Software-Defined Data Network
- Virtual Telecommunications Network Services (Tariff 12)

AT&T said it will test other PBX vendors for compatibility "in the near future."

AT&T downplays frame relay NNI savings

By Joanie Wexler
Bridgewater, N.J.

AT&T has thrown some dollar signs behind its unwavering decision not to support frame relay network interconnections with local exchange carriers, but its economic rationale failed to allay user and analyst skepticism.

The carrier recently said it would not hook its InterSpan frame relay net with counterpart networks from the LECs because such linkages would degrade its overall ability to deliver end-to-end service-level guarantees (*NW*, Aug. 7, page 1). Linking its frame relay network with LEC frame relay nets — achieved by using the Frame Relay Forum's Network-to-Network Interface (NNI) — would stifle the carrier's ability to manage the local portion of a user's network, AT&T claimed.

It could also reduce the features available between two carriers' networks to the lowest common denominator, AT&T contended.

AT&T has acknowledged, though, that the main reason users would want a local exchange frame relay access option via NNI would be to save money, a goal achieved by piggybacking access from multiple sites in a local area onto the LEC's switched network. This is an alternative to paying for dedicated access from each of many sites.

Both those savings are not so great, at least according to sample pricing given to *Network World* by AT&T. The carrier's hypothetical scenario is based on a nationwide network that has a high concentration of nodes in the Nashville area plus a few others scattered through the South and Southwest. Here a customer

See Savings, *page 16*

NNI vs. dedicated access: A snapshot

This hypothetical frame relay network configuration shows NNI access slightly less expensive than dedicated lines, although AT&T contends users would trade off quality for the savings.

Location	Number of sites	Monthly access cost using NNI*	Monthly access cost using dedicated line*
Lexington, Ky.	2	$762/site x 2 = $1,524	$586/site x 2 = $1,172
Greater Nashville area	24	$294/site x 24 = $7,056	$339/site x 24 = $8,136
Oklahoma City	1	$303	$279
Dallas	1	$476	$271
Total		$9,359	$9,858

*Based on current list prices.

SOURCE: AT&T, BRIDGEWATER, N.J.

Livingston gets into 'Net game with new wares

By Jim Duffy
Pleasanton, Calif.

Livingston Enterprises, Inc. earlier this month brought out a dial-up router and a communications server targeted at the burgeoning market for Internet access.

"This area [of the market] is heating up because of the Internet," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. "Those two products represent both ends of the connection."

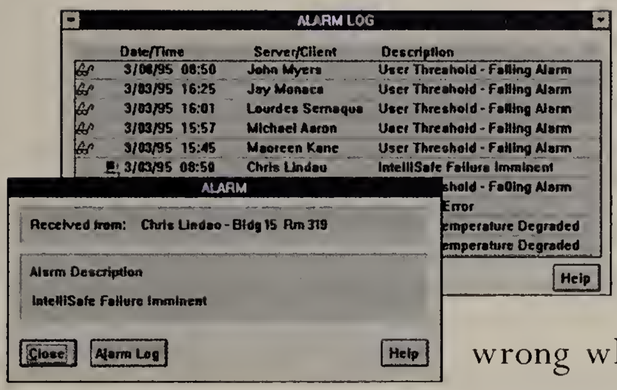
The dial-up router is called the PortMaster Office Router. In addition to Internet access, the routers can also be used for connecting branch offices to corporate nets and to allow temporary networks to be set up for short-term use, Livingston said.

PortMaster Office Router features one Ethernet port and two 115.2K bit/sec asynchronous WAN interfaces, plus routes IP and IPX traffic. It can also pro-

See 'Net game, *page 16*

Chris Lindau - Bldg 15 Rm 319

COMPAQ



```
ALARM LOG
    Date/Time        Server/Client       Description
    3/08/95  08:50   John Myers          User Threshold - Falling Alarm
    3/03/95  16:25   Jay Monaca          User Threshold - Falling Alarm
    3/03/95  16:01   Lourdes Sernaque    User Threshold - Falling Alarm
    3/03/95  15:57   Michael Aaron       User Threshold - Falling Alarm
    3/03/95  15:45   Maoreen Kane        User Threshold - Falling Alarm
    3/03/95  08:50   Chris Lindau        IntelliSafe Failure Imminent
                                                   shold - Falling Alarm
                                                   Error
                                                   emperature Degraded
                                                   emperature Degraded

ALARM
Received from:   Chris Lindao - Bldg 15  Rm 319
Alarm Description
IntelliSafe Failure Imminent
```

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Savings

Continued from page 13

could save about $500 a month overall using local frame relay access in each of the territories, as opposed to dedicated circuits from AT&T (see graphic, page 13).

However, most users would be willing to shell out this amount to ensure the network uptime levels it contracts with AT&T are met, according to AT&T.

Carolyn Tommie, AT&T InterSpan distribution strategy manager, said many users think LEC frame relay access involves costs only for access links into the LEC frame relay network, plus port and permanent virtual circuit costs.

Many users are not aware that in addition to the portion of the network priced by the LEC, users accessing an interexchange carrier's (IXC) network via NNI also share in the cost of a number of network components between the LEC NNI port to the IXC NNI port, Tommie said. These costs average between about $915 and $1,465 per month per AT&T-LEC net linkage; this means that for one connection with a different LEC on each end and AT&T in the middle, the NNI fees would be twice these amounts, or $1,830 to $2,930 per month.

In addition, AT&T is pricing dedicated access into the InterSpan net based on the distance from the customer site to the nearest T-1 point of presence, whether there is a frame relay switch there or not, and "eating the difference" to backhaul traffic to the switch, Tommie said.

AT&T cost analyses reflect a crossover point of about 20 sites in a given region as benefiting cost-wise from LEC frame relay access. And Tommie said AT&T has determined that less than 20% of its customers run network configurations with any site populations that dense.

Some observers were iffy about the black-and-white nature of AT&T's position. "I think 20% of the AT&T frame customer base represents a lot of customers who will have to pay a lot more for frame relay," said Christine Heckart, senior consultant for broadband services at TeleChoice, Inc., a consulting firm in Verona, N.J.

She noted that in a scenario where users run just a few pockets of dense sites, the AT&T dedicated line-in-the-WAN configuration works fine. "But if you have lots [of pockets] scattered all over the country, you can't afford to mesh them all with private lines. That's the point of frame relay," Heckart said.

And while Phil Evans, director of telecommunications at Perot Systems Corp. in Dallas, can see the logic of wanting to keep the network pure, he said that "to ignore NNI standards and deny users alternatives may rear up and bite them. They might have to rethink this." ■

What do you call an application that makes phone, fax and e-mail accessible from anywhere?

■ Actually, it's called computer telephony integration. The latest addition to Nortel's portfolio of business applications.

Cool. This elegant integration of your phone system and LAN manages all your communications and messaging from virtually anywhere. ■ Experience the simplicity of visual fax messaging, customized phone directories, real-time data base screen pops and personal video conferencing. ■ Nortel makes the dream of computer telephony integration an amazing reality. ■ For a free Nortel business applications demo disc, you can reach Northern Telecom at 1-800-4 NORTEL (dept 1629) or on the Internet at http://www.nortel.com. ■

NORTEL
A World of Networks
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'Net game

Continued from page 13

vide access to the Internet and corporate networks via ISDN lines through an external ISDN terminal adapter attached to the router's external asynchronous port.

PortMaster Office Router technology was licensed to Cisco Systems, Inc. earlier this year and is the basis of Cisco's 1020 Dial-on-Demand Asynchronous Router. PortMaster Office Router differs from the 1020 in that it offers both 10Base-T and AUI Ethernet ports instead of 10Base-T only, and the price is $100 to $300 less than the Cisco device, Livingston said.

The router supports the Remote Authentication Dial In User Service (RADIUS) access security method, and packet filters can be customized by address, protocol service or session status to create firewalls against unauthorized data access.

PortMaster Office Router is priced at $1,395. It will be available in September.

The communications server, meanwhile, is called PortMaster 25. It is targeted at Internet service providers and corporations where large numbers of users need access to Internet and corporate network resources over dial-up lines.

PortMaster 25 features 24 dial-up ports plus a console port for management, which can also be used as a dial-up port.

PortMaster 25 provides net access at up to 115.2K bit/sec for IP and IPX traffic.

With PortMaster 25, Livingston expects to go head-to-head with Shiva Corp.'s LANRover Plus, said Bruce Byrd, Livingston's director of marketing. The company believes it can differentiate PortMaster 25 from LANRover Plus based on price and support for RADIUS security, he added.

PortMaster 25 costs $3,495 and is available now.

©Livingston: (800) 458-9988.

INTERNETWORKING MONITOR

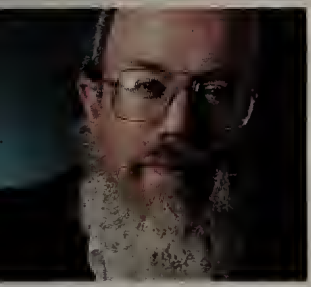
Of bytes, pixels, phones and sausage

The lead-in to the Communications Act of 1995, just passed by the U.S. House of Representatives, says that the bill is "to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies."

Neat-o, just what I always wanted — Congress helping to ensure quality service and new technologies.

There is a lot to this bill (31K words, for example), and it could have profound effects on not only telephone and cable TV services, but also, by extension, the future of the national and international data network we now call the Internet. The bill specifically seeks to change the course of telecommunications services provisioning away from the current local regulated monopolies and into a glorious future of open competition.

Telecommunications, by the way, is defined as "the transmission, between or among points specified by the subscriber, of information of the subscriber's choosing, without change in the form or content of the information as sent and received, by means of an electromagnetic transmission medium, including all instrumentalities, facilities, apparatus and services (including the collection, storage, forwarding, switching and delivery of such information) essential to such transmission."



Scott Bradner

Terse these guys aren't, but I sure am glad to know what we have been talking about all this time.

In general, this is a deregulation bill with a number of tweaks — some larger than others — to protect some of the established interests and, in some places, the public. For example, it prohibits a telephone service provider from taking over a cable provider in the same service area, thus ensuring that there will be multiple providers of the wire into the house. (Strangely enough, it does not prohibit the reverse — a cable company taking over a telephone company.)

There is a widely reported exception to this that permits takeovers where the cable system serves a franchise area with less than 35,000 inhabitants. The wording seems to permit a phone company to buy up bunches of cable systems as long as each one serves a small area. I, for one, am not much of a fan of this exception and think it will make for quite high prices in a whole lot of the country.

The bill could also go a long way toward removing the advantage of companies that have existing rights-of-way. It requires that the holders of such rights must lease pole attachment space, conduit space and other similar facilities to telecos and "charge just and reasonable and nondiscriminatory rates" for the use.

This bill is a congressional work in progress, and one should remember what someone (I think it was Will Rogers) said about the inadvisability of watching Congress make laws or butchers make sausage.

With the Senate having somewhat different views on many of these topics and the phone companies spending millions of dollars on TV advertising in an attempt to modify parts of the bill, it could be difficult to even recognize any part of HR 1555 after it comes out the other end of the meat grinder. But, in general, the idea that Congress is helping to ensure quality service and new technologies will take some getting used to.

The text of bills like this, plus other congressional information can be found on the Web at http://thomas.loc.gov.

Disclaimer: I consulted neither Harvard's Business School, which educates the discreetly greedy, nor the Kennedy School of Government, developers of legal sausage makers, in forming the above opinions.

Bradner is a consultant with Harvard University's Office of Information Technology. He can be reached via the Internet at sob@harvard.edu. He shares this space with Daniel Briere and Christine Heckart, whose column will appear next week.

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The long march to local telephone competition

Big IXCs pursue different strategies to the same bleak end.

By David Rohde

Looking for competition to your local exchange carrier for switched telephone service? Don't wear yourself out.

"Basically, it still doesn't exist," said Gary Parsons, chief executive officer of MCImetro, Inc., the subsidiary of MCI Communications Corp. charged with taking on the regional Bell operating companies in the nation's biggest cities.

To be sure, competitive access providers (CAP) have taken away lucrative Bell business for high-capacity dedicated access lines. And in some pocket, such as New York City, CAPs have gained the ability to provide local dial tone (see story, this page).

But almost nowhere can users go to their interexchange carriers (IXC) to obtain switched-access voice or data services without utilizing the local loop provided by the RBOC or other monopoly local exchange carrier (LEC).

The strategies being pursued by MCI and Sprint Corp. to force their way into the local markets with newly built or licensed facilities will take literally billions of dollars to succeed (see graphic).

As a result, some analysts have praised AT&T's markedly more conservative strategy of looking to buy unbundled RBOC wholesale network elements, such as switching and local transport, and rebundle them for resale as a local telephone service.

But so far, AT&T's refusal to commit capital dollars to the effort call to mind the adage, "No pain, no gain."

Without its own alternative infrastructure, AT&T first has had to wait for LECs to begin wholesaling their network elements due to innovative local regulatory initiatives.

In the past year, two such situations — in Chicago and in Rochester, N.Y. — have presented themselves as a result of open-market plans presented to regulators by Ameritech Corp. and Frontier Corp., the LECs for these respective cities.

Months later, AT&T officials bitterly complain that neither plan gives them a fair shot because the wholesale prices offered by Frontier and Ameritech are unreasonable.

In Rochester, where the New York State Public Service Commission approved Frontier's open-market plan, the wholesale comes to only 5% off the retail tariffed price, said Frank Ianna, vice president of AT&T's Network Services Division.

The offering in Chicago, where a plan negotiated by Ameritech with the U.S. Department of Justice is awaiting federal court approval, is even worse, Ianna said. "It would cost us $17 in Chicago for the local loop, whereas [Ameritech] sells it for $9.05," he scoffed.

Widespread frustration over these issues helps explain the IXCs' recent assault against the telecommunications reform bill passed by the House of Representatives. The bill requires RBOCs to interconnect with prospective competitors' networks. But it does not establish a rigorous standard for pricing wholesale network elements or even mandate that a facilities-based (non-resale) competitor be present before an RBOC enters the long-distance business.

A foot in the door

And the carriers face logistical challenges, too. An alternative fiber ring is of little value to a user in a shared-tenant building if the alternative carrier cannot gain entry to the building.

"Periodically, you find property owners who make undue demands or try to take advantage of the situation," MCImetro's Parsons said. "But you move on to the next building." Because MCI, unlike the CAPs, already has a large base of customers in any given area, Parsons is confident that recalcitrant landlords will relent under pressure from tenants who use MCI and want an RBOC alternative. ■

Pick your strategy

The three big interexchange carriers have markedly different approaches to entering the local telephone market.

	AT&T:	**MCI:**	**Sprint:**
	"I can get it for you wholesale"	"Roll your own"	"The future is convergence"
Strategy description	Buy network elements from LECs and resell service. Develop wireless local access with McCaw.	Build local networks through MCImetro.	Form partnerships with three big cable companies. Build PCS network through federal licenses.
Advantages	Allows quick entry to local markets. Gets big installed base with McCaw.	Can be masters of their own destiny. Allows full pricing flexibility.	Cable companies have access to most customer sites. New venture will own Teleport Communications Group.
Disadvantages	Must be able to buy LEC network elements at truly wholesale prices. Wireless local access is unproven.	Multibillion-dollar capital expenditure is required. New local fiber rings don't guarantee access to buildings.	Telephony over cable is unproven. PCS license holders face site, zoning and standards battles. Teleport ownership is not finalized. Capital requirement is even greater than MCI's.

MFS banking on big returns from open local phone marts

By Tim Greene

Omaha, Neb.

Quarter after quarter, MFS Communications Company, Inc. reports triple-digit percent revenue increases over the same period the year before.

At the same time, company losses have been mounting, yet investors continue to lend the company money.

The reason, analysts say, is that the company has been spending loads of money to buy and build an infrastructure that ultimately will pay off — and with coming telephone deregulation, the windfall could be big.

The company's bread and butter in the local market has been sales of private lines, but it has also been installing switches in many of the cities it serves, allowing it to provide local switched dial-tone service once regulations allow it to become a local co-carrier.

In July, the company announced its latest capital investment plan — $120 million to buy Ericsson switching equipment through mid-1997.

The company has authority to operate as a co-carrier in Connecticut, Illinois, Maryland, Massachusetts, Michigan and New York, and it hopes to win that status in California as soon as it becomes legal Jan. 1.

That is significant; California represents 40% to 50% of MFS revenue already, according to Gary Brandt, an investor relations specialist for MFS.

Its strategy is to go to its current long-distance, private access customers and offer them switched local phone service, too.

The MFS cash-flow situation is not a problem yet, according to Charles DiSanza, a financial analyst with New York investment firm Gerard Klauer Mattison Co.

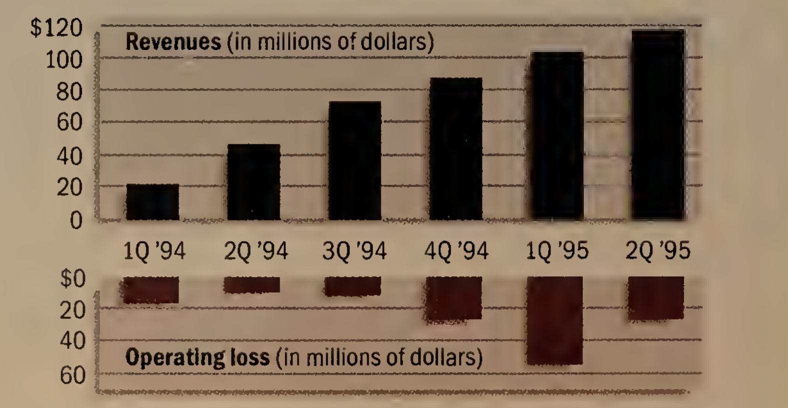
"When you open a new geographic market, it takes awhile to get sales going. You have to spend the money first," DiSanza said.

The competitive access market is worth $2 billion per year or less nationwide, according to DiSanza. The switched local service market represents $11 billion, he said. Because MFS also offers long distance, "They're talking about providing full telephone service," he said. "That puts them in the full $90 billion business."

Migrating from providing local private access to providing switched local service, the company stands to increase its earnings margin from a percent somewhere in the teens to 30% to 35%, Brandt said. ■

MFS money flow

While MFS Communications' revenues continue to grow, so too do its operating losses.



GRAPHIC BY TERRI MITCHELL

Teleport wins auction house bid

Christie's, Inc., the international auction house, deals with a tony clientele that demands flawless service.

That extends from the auction floor to the information systems department, where IS director George Blaurock recently decided to dump NYNEX Corp. as its local carrier for outgoing calls.

He said he switched the outgoing lines from NYNEX to Teleport Communications Group (TCG) because NYNEX's time to connect calls and time to repair were too slow.

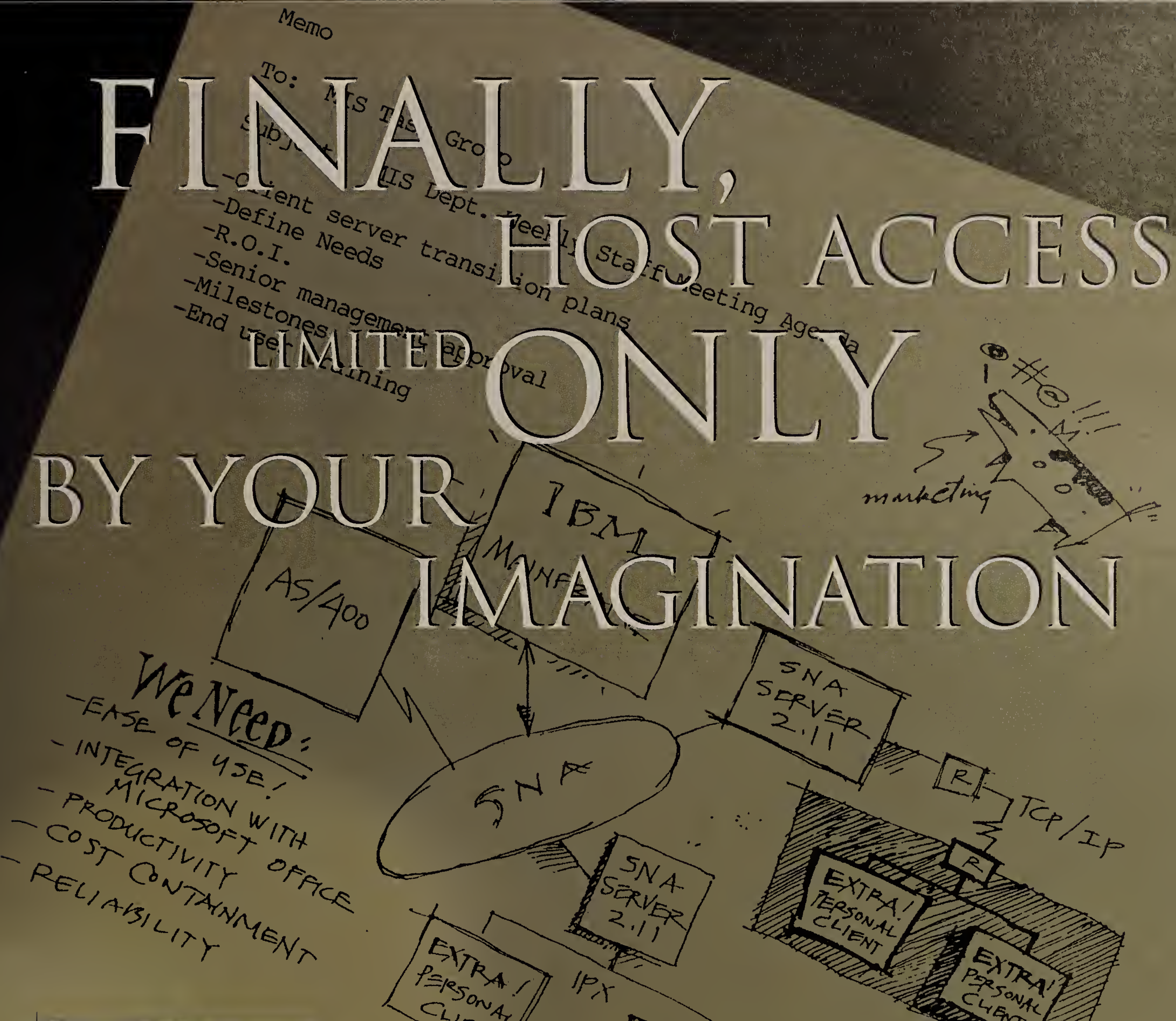
TCG service costs a few percent less than NYNEX, but he would have switched even if it was break-even, Blaurock said.

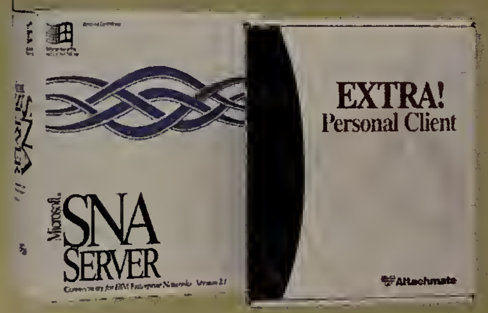
He uses a TCG T-1 line off a private branch exchange for the outgoing lines.

He'd use TCG for incoming, too, but NYNEX owns the phone numbers and TCG would have to issue new ones. That would mean reprinting too much stationery and too many catalogs.

By Tim Greene

FINALLY, HOST ACCESS LIMITED ONLY BY YOUR IMAGINATION





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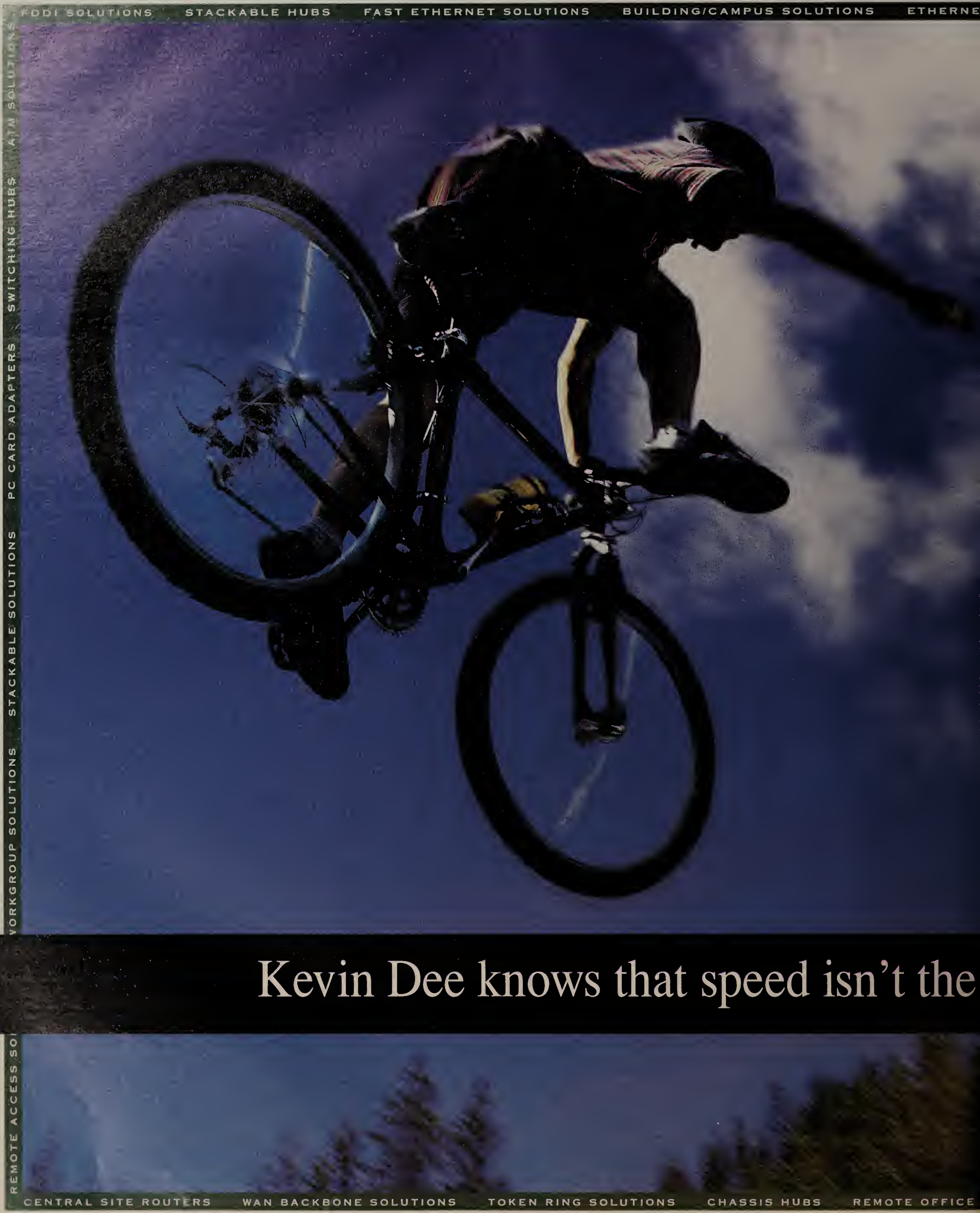

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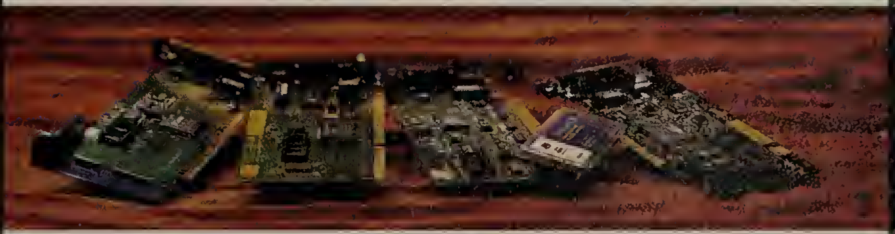

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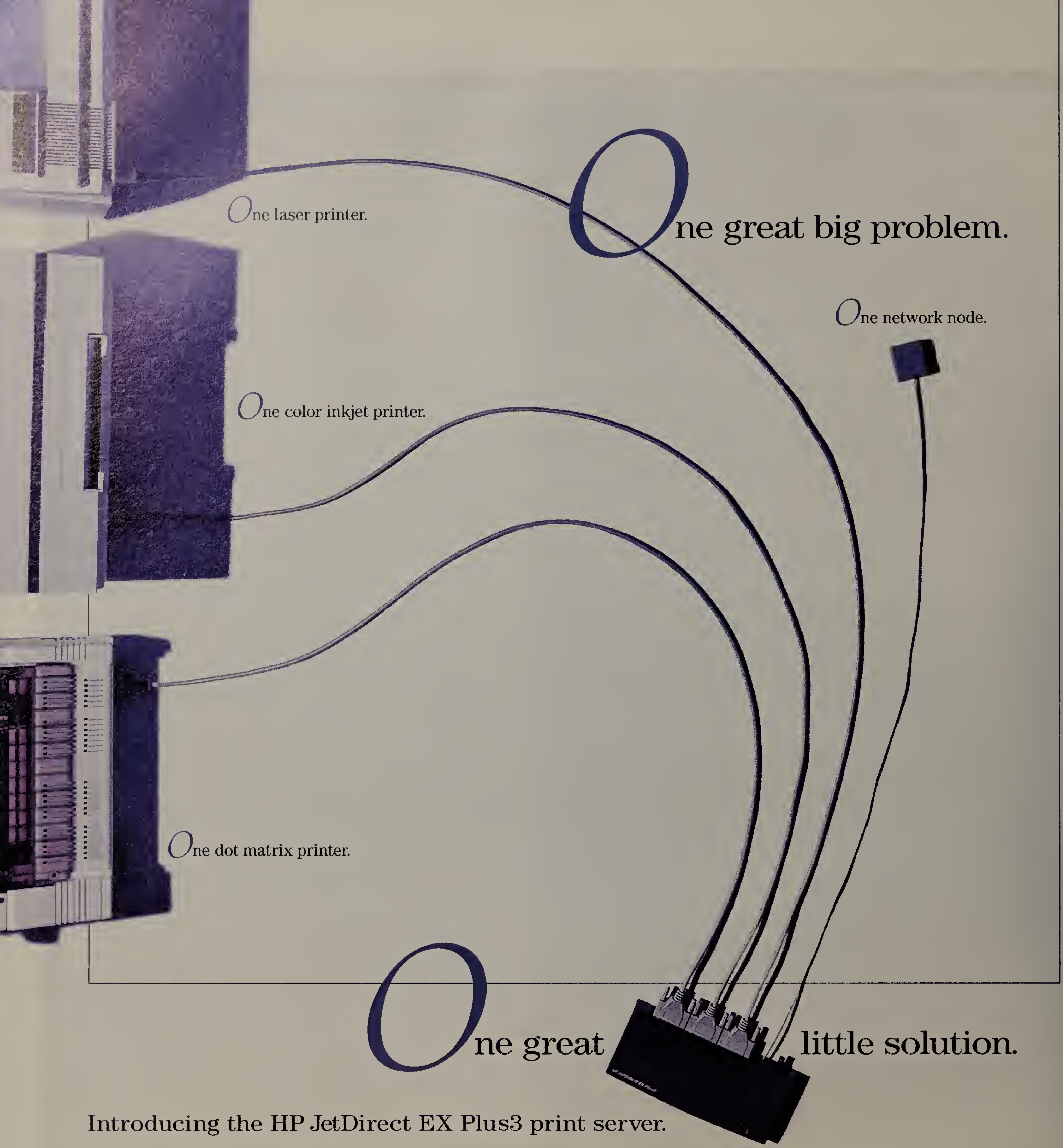

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LAN TIMES READERS CHOICE 1995

Introducing the HP JetDirect EX Plus3 print server.

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Your office has all kinds of printers, and all kinds of printer configurations, all of which can change daily. And it's your job to hook them all up to the network. With a limited number of nodes, that can be a big problem.

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NOS Compatibility: Novell NetWare; Microsoft® Windows™ 95, Windows NT, Windows for Workgroups, LAN Manager; IBM LAN Server; UNIX®: HP-UX, SunOS, Solaris, IBM AIX, SCO UNIX, lpd; Apple Ethertalk
Management Support: HP JetAdmin print management software enables consistent installation and management of any HP JetDirect connected printer on the network; supports SNMP-based network management software
- Flash memory for easy upgrades
- Multiple protocols with automatic switching
- Three high-performance IEEE 1284 ports
- 3-year return to HP warranty
- HP JetDirect EX and EX Plus3 print servers support all parallel printers
- HP JetDirect cards support HP printers with I/O slots

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Local Networks

Covering: Operating systems • LAN management
Hubs • Switches • Adapters and other equipment

Briefs

■ **Data General Corp.** *of Westborough, Mass., last week announced the AViiON AV 10000 server, a Unix-based* **symmetrical multiprocessing system.** *The server can support 240 CLARiiON Redundant Array of Inexpensive Disks (RAID) storage subsystems with a combined capacity of more than 10 terabytes of on-line disk storage. The AV 10000 starts at $590,000 for a 16-processor configuration and under $1 million for a 32-processor system. The server will be available by year-end.*

DG: (508) 366-8911.

■ **Farallon Computing, Inc.** *in Alameda, Calif., this week will introduce four* **PCMCIA adapter cards** *for Apple Computer, Inc.'s Macintosh PowerBook computers, which are expected to be announced later this month. The new cards will include an EtherWave 10Base-T network adapter, an EtherMac 10Base-T adapter, an EtherMac 10Base-T/thinnet combination adapter and a LAN/modem PowerBook PC Card.*

The EtherMac adapters will be available this month, the EtherWave card will ship in October, and the LAN/modem will be out in December. Pricing starts at $199.

Farallon: (510) 814-5000.

■ *Santa Clara, Calif.-based net security and utilities vendor* **McAfee** *last week announced a new* **software distribution product** *for Novell, Inc. NetWare networks. SiteExpress 3.0 supports NetWare 3.X and 4.X servers, and can automatically install software on Windows 3.1, Windows 95, DOS and OS/2 workstations across TCP/IP and IPX/SPX networks. It can also notify net management applications of the status of distribution orders using Simple Network Management Protocol traps. SiteExpress 3.0 will ship in September for between $17 per node for 50 clients to $10.50 per client for 1,000 licenses.*

McAfee: (408) 988-3832.

LANNET device shines in 10M/100M switch testing

3Com, Grand Junction, NBase also are switch front-runners.

By Jodi Cohen
Rockland, Mass.

Switching vendors are narrowing the performance gap once enjoyed by LANNET Data Communications, Ltd. by offering new feature-rich 10M/100M bit/sec Ethernet switches, according to a recent test.

In addition to measuring latency and congestion, the test covered throughput, packet loss, forwarding rate and network management. The evaluation, which included 10 switches from six vendors, was conducted by Strategic Networks Consulting, Inc. in conjunction with Scott Bradner, director of Harvard University's Network Device Test Lab.

LANNET's LANswitch/MultiNet was the only device that could handle the test's 30 streams of Ethernet-to-Ethernet switching, and it also had the lowest latency and excellent congestion control. But Rolph McClellan, senior consultant at Strategic Networks, said LANNET is not necessarily the automatic switching choice.

"A lot of other switches had slightly weaker performance results but of negligible difference to the end user," he said. "While LANNET may have the technically superior specs, the user can't really notice the difference between 10 microsec and 40 microsec of latency, for example."

Top of the heap

Other top performers that caught McClellan's eye included dual-speed switches from 3Com Corp., Grand Junction Networks, Inc. and NBase Switch Communications.

McClellan said the appropriateness of different devices can depend on where a switch will reside in the network and what features are most important to the user.

For example, he said users might want to consider Grand Junction's FastSwitch 10/100 at $150 per port to provide dedicated Ethernet to the desktop or 3Com's LANplex 2500 for users needing a scalable backbone switch with high port density.

NBase's NH208 MegaSwitch also scores high because of its approach to congestion control, McClellan said. NBase applies back pressure, or flow control, on a per-packet basis rather than a per-port method in order to prevent blocking or packet loss.

Other vendors that submitted Ethernet 10M/100M bit/sec switches for testing included Cisco Systems, Inc. and IBM. Strategic Networks will be conducting a second dual-speed switch evaluation in the fall, when more products are expected to be ready for testing.

For more information about the testing results, the complete report will be published on the Internet by Sept. 15 at http://www.snci.com or call (617) 871-5195. ■

Pick of the litter

Users looking for 10M/100M bit/sec switches might want to evaluate these top performers.

Small workgroup:
- 3Com LinkSwitch 1000
- Grand Junction FastSwitch 10/100

Large workgroup:
- LANNET LANswitch/MultiNet

Data closet segmentation:
- 3Com LANplex 2500
- 3Com LinkSwitch 2200
- Cisco EthernetSwitch Pro16
- NBase NH208 MegaSwitch

Backbone:
- 3Com LANplex 2500
- LANNET LANswitch/MultiNet

SOURCE: STRATEGIC NETWORKS CONSULTING, ROCKLAND, MASS.

Bay Networks boosts its Centillion switch by adding Ethernet module

By Jim Duffy
Mountain View, Calif.

Bay Networks, Inc. has added an Ethernet switching module to its newly acquired Centillion 100 token-ring and ATM switch to satiate users of mixed LAN environments that need increased performance.

"Forty-three percent of large token-ring sites also have Ethernet," said Kathryn Korostoff, president of Sage Research in Natick, Mass. "A lot of the benefit [of a switch that supports both token ring and Ethernet] is flexibility and investment protection."

The 16-port EtherSpeed module for the Centillion 100, which was expected (*NW*, July 31, page 6), enables the switch to be used as a backbone device for interconnecting Ethernet and token-ring segments to dedicated servers, or as a high-performance departmental Ethernet switch.

When fully configured with five 16-port EtherSpeed modules and an eight-port EtherSpeed management module, the Centillion 100 can support as many as 88 switched 10M bit/sec ports.

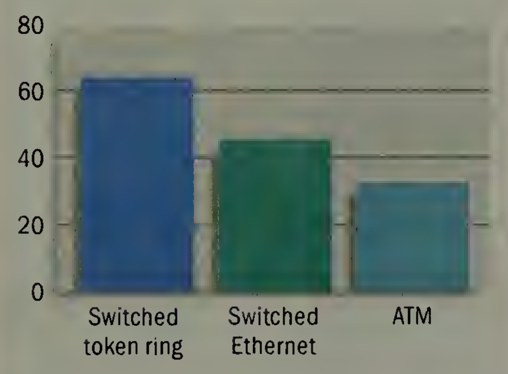
EtherSpeed supports selectable cut-through and store-and-forward switching on a per-port basis. The switch can cache as many as 16,000 media access control addresses and supports the establishment of virtual LANs.

In addition to the EtherSpeed module, Bay Networks rolled out software that allows Centillion 100s to be clustered over multiple ATM links for load balancing and scalability. Called GIGArray, the software is said to prevent contention in the backbone and increase reliability by rerouting traffic over redundant links.

See Bay Networks, *page 28*

WHICH WAY TO SWITCH

Percent of token-ring shops planning to install switching technology.



Figures are based on a survey of 76 sites.

GRAPHIC BY TERRI MITCHELL SOURCE: SAGE RESEARCH, NATICK, MASS.

3Com revs up remote LAN access via ISDN

By Michael Csenger
Santa Clara, Calif.

3Com Corp. today will introduce a revised digital modem line designed to let remote users dial in to corporate LANs via 128K bit/sec ISDN links.

3Com's new Impact modems provide ISDN connectivity for remote LAN access, Internet access and other dial-up applications.

The modems support the new Multilink (ML)-PPP inverse multiplexing standard, which allows two 64K bit/sec ISDN B channels to be combined into a single 128K bit/sec link. Used in conjunction with central-site remote access servers that support ML-PPP — as 3Com's AccessBuilders do — the Impact modems provide throughput about four times faster than V.34 analog modems.

The Impact modems also provide an analog voice port that lets standard telephone and fax equipment be connected to the ISDN line.

An optional version is configured with a 14.4K bit/sec internal modem, which provides interoperability with remote systems that are not ISDN-based. Sources said that 3Com will soon offer an upgraded 28.8K bit/sec V.34 modem option, as well.

ISDN priced right

During the past six months, the price of ISDN terminal adapters — the proper name for digital modems — has fallen to about the level of high-end analog modems a year ago. Available now, 3Com's Impact models list for $749 and $649 with and without the optional analog modem, respectively.

"I paid around $700 for an early 28.8K bit/sec [U.S. Robotics, Inc.] Courier modem, so when you figure street prices today, ISDN is a good deal," said Geoffrey Smith, president of

See 3Com, *page 28*

U.S. Geological Survey had one
discovered NetWare 4.1's built-in mult

When the U.S. Geological Survey went looking for broader connectivity in a network operating system (NOS), they discovered NetWare 4.1.

For most networks, the need to support a wide assortment of client platforms and protocols is a fact of life. For Evan Trebing, U.S. Geological Survey computer specialist, so is the need for the NetWare® 4.1 NOS.

NetWare 4.1 comes with everything you need to run your network on TCP/IP, allowing you a choice of IPX or TCP/IP protocols. It also provides built-in Macintosh support. Add this to existing multiplatform support for DOS, MS Windows, OS/2 and UNIX clients and you'll find that NetWare 4.1 is the richest cross-platform environment around.

With NetWare 4.1, multiprotocol routing even comes built-in. This means you get the advantages of cross-protocol routing capabilities while saving the costs of additional hardware.

But the savings don't stop there. According to

Mr. Trebing, "NetWare Directory Services™ (NDS™) is completely revolutionizing our network." Because this unique graphical user interface lets you view and update your network as a single entity, NDS helps you to reduce training time, increase productivity and

thought when they
protocol support: Paydirt.

reduce your cost of ownership.

All of which helps to prove that there's simply no other network on earth like NetWare 4.1.

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Toby Corey
Vice President Marketing,
Novell Operating Systems Division

NetworkWorld

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Internet apps

Apple rounds out 'Net wares with desktop tools

By Peggy Watt
Boston

Apple Computer, Inc. has released an Internet access bundle that completes its suite of tools for the 'Net.

The $59 Apple Internet Connection Kit bundles nearly a dozen third-party and Apple applications for LAN-based or stand-alone access to the Internet, including Netscape Communications Corp.'s Netscape Navigator. Apple and Netscape developers are working together to integrate Netscape with Apple's QuickTime multimedia products. Packs for multiple users on a LAN are also available.

A good rep

Apple is drawing on its experience and reputation for innovation to stake its claim on the Internet. It is pushing hard for a share of the tools market with the announcement of Internet access via its eWorld on-line service and the release last spring of Internet Server Solution, an all-in-one Web server construction kit.

Still scheduled for release this summer is a domain name server that will complement Internet Server Solution.

"The Internet is a wide-open market with new opportunities for innovation," said David Nagle, Apple's senior vice president for worldwide research and development.

Taking aim

In pursuing the Internet, Apple is targeting corporate users as well as its traditional education and small-business market.

"We have this power-to-the-user concept, and that's not necessarily seen as a virtue to the network manager," Nagle said. He pointed to the MacOS' improved communications hooks — largely via the Open Transport interface that supports industry-standard net protocols — as an Apple response to corporate needs.

Nagle said Apple's Internet Server Solution has been well received and claimed Macintosh servers are ahead of DOS and Windows systems, but behind Unix, in new Web server installations.

Doug McLean, Apple's director of cybertech products, added that, "We've got an enormous cost advantage over Unix servers." Pricing for Apple's Internet Server Solution packages starts at less than $3,000.

Apple's penchant for ease of use can also help raise the bar with Internet access products, said Amy Wohl, editor of the market research report "TrendsLetter" in Narberth, Pa. "Apple's products can help set a standard of performance and introduce some real competition," Wohl said. ■

BusinessBriefs

ON Technology Corp. last week launched the Editors' Choice Catalog, a World-Wide Web site devoted to selling tools for Novell, Inc. NetWare networks. Customers visiting http://www.on.com/edchoice.html will see a range of LAN management, utility, scheduling and groupware products, and will be able to fill out order forms on-line.

ON Technology: (617) 374-1400.

Novell, Inc. continued a recent spate of antipiracy actions by prompting a police raid on the offices of the Planet Gallifrey bulletin board system (BBS) in Salt Lake City. Novell antipiracy officials accompanied U.S. marshals on a court-ordered raid of Planet Gallifrey, during which marshals seized and impounded hardware used to support the BBS. Novell has also lodged a civil suit against Planet Gallifrey's operator, alleging the BBS was distributing NetWare 3.12 free of charge.

REACHING LANs OVER WANs

3Com's remote LAN front was built by acquiring companies with WAN access and ISDN technologies.

Remote LAN access product	Description	Where it came from
Impact	Remote client hardware and software	Access Works, acquired in February
Arpeggio	ISDN-based remote LAN internetworking product	Sonix, bought in May
AccessBuilder	Remote LAN access servers	Centrum Communications, purchased in February 1994
Aperture	High-end remote access concentrators for large organizations and service providers	Primary Access, acquired in June

3Com

Continued from page 25

Wesco Technologies, Ltd., a chemicals trader based in San Clemente, Calif.

Smith started beta-testing the Impact modem in July, after using an earlier 3Com Quick Access Remote terminal adapter that provided only single B-channel connectivity.

"For $750, you're getting a whole lot more than a modem," he said. "You get wonderful high-speed digital connections, plus voice, fax and analog support in one small box. Ultimately, I want to see these things built right inside my computer."

Smith recently downloaded an 8M-byte Windows NT fact file over the Internet. "I had it in about 11 minutes," he said. "With a 14.4 [V.32bis] modem, I would've been there all morning."

©3Com: (408) 764-5000.

Bay Networks

Continued from page 25

As many as 16 Centillion 100s can be clustered in a GIGArray to provide aggregate throughput of more than 10M packet/sec, Bay Networks said.

The EtherSpeed and GIGArray capabilities are now manageable via Bay Networks' SpeedView management application for the Centillion 100. With SpeedView, users can customize packet filtering, and monitor and redirect traffic on both switched token-ring and Ethernet segments.

In the fourth quarter, Bay Networks' Optivity application will be able to discover and map Centillion 100s onto a management console screen, and perform hop-by-hop troubleshooting, including fault correlation and diagnosis. In the first half of 1996, Optivity users will be able to manage virtual LANs configured with the switches, Bay Networks said.

The EtherSpeed module costs $6,495 and will be available in October.

GIGArray is free of charge for current Centillion 100 users, and it will become available in September.

©Bay Networks: (415) 969-6700.

COMMENTS?

See "How to reach us" on the Opinions pages.

NET RESULTS

The switching game marks its next target:FDDI

Digital Equipment Corp. had it figured out a few years ago. Now others, including XLNT Designs, Inc., 3Com Corp., Cabletron Systems, Inc. and Alantec, are ready to leap into the fray.

It is FDDI switching, the next big leap in the LAN switching game (*NW*, July 24, page 10).

Skip MacAskill and Melinda Le Baron

Indications are that FDDI switching can have the same effect on a backbone net that Ethernet switching has on a workgroup net in that it can help extend the life of an existing net environment.

There are many contributing factors associated with the congestion of building and campus backbone networks. New applications, the consolidation of servers, and the increase in desktop and workgroup segmentation all contribute to the traffic level on the backbone.

FDDI switching can enable a net environment to handle these changes. It can significantly increase backbone bandwidth, provide an interoperable, standards-based solution and increase the lifetime of a network by 18 to 24 months.

One of the results of adding desktop and workgroup bandwidth through LAN switching is that the traffic volume of the network can potentially increase by the number of additional LAN segments multiplied by the amount of effective bandwidth per LAN.

The consolidation of servers is another cause of backbone congestion. A common rule of thumb used for distributed server environments was that 80% of the traffic stayed local to the workgroup and 20% of the traffic traversed the backbone for applications such as E-mail, interdepartmental communications and file transfers. This is known as the 80/20 rule.

With the consolidation of local servers in the data center, the inverse of the 80/20 rule applies.

New applications can also increase traffic volume on the backbone. Applications implemented on a corporate basis, such as Lotus Notes, can change the traffic profile and traffic volume of the network.

Fortunately, there are more alternatives to adding backbone bandwidth to an existing network than ever before. The most popular with vendors and the trade press has been the highly marketed ATM switch.

But also among the choices lies switched FDDI, a simple, standards-based technology that can add the necessary bandwidth without requiring the user to make a costly long-term decision. FDDI is a proven solution for backbone bandwidth problems, so why not FDDI switching?

When placed behind collapsed backbone routers, they provide dedicated 100M bit/sec high-speed connections between the routers. Centralized servers can also be directly attached to the FDDI switch for one or more 100M bit/sec connections.

The amount of aggregate bandwidth will equal half the number of active switch ports because of the transmit and receive patterns through the switch. Because of the stability of FDDI standards, interoperability with existing routers, adapter cards and hubs installed in the network will not be a problem.

Digital was the pioneer of FDDI switching technology with its GigaSwitch product. Others, however, were slow to see this market opportunity, although many are promising FDDI switching capabilities over the next 12 months.

The bottom line here is users that have a need for increased backbone bandwidth but are not ready to embrace new technologies should seriously consider FDDI switches.

MacAskill is a senior research analyst and Le Baron is a research director in Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached at (203) 967-6700.

Briefs

■ **Information Builders, Inc. (IBI),** *based in New York, last week announced* **Enterprise Data Access (EDA)/Copy Manager for HP-UX,** *which extracts, transforms and moves data from legacy databases into centralized data stores known as data warehouses. The software consists of client-based Query Builder, Target Builder for specifying the target relational database management system, Data Transformer for defining transformation rules and Schedule Builder for setting up sessions. EDA/Copy Manager costs $22,000; the Windows-based client software is included in the price.*

Separately, the company announced **EDA/Start,** *which combines EDA/SQL and technology from Boston-based Open Environment Corp. for accessing data sources via the Open Software Foundation, Inc.'s Distributed Computing Environment.*

Available on HP-UX and IBM AIX, EDA/Start is priced at $19,750. Both IBI products are available now.

IBI: (212) 716-4433.

■ **Softbridge, Inc.** *in Cambridge, Mass., last week announced Automated Testing Facility (ATF) 3.5, a new version of its* **testing tool** *for client/server applications. ATF 3.5 now supports Windows NT and sports an enhanced graphical user interface. The new version also has extended custom control support, enhanced reporting and native TCP/IP support. Pricing starts at about $25,000.*

Softbridge: (800) 955-9190.

■ **FileNet Corp.** *in Costa Mesa, Calif., last week announced a version of its* **document imaging and workflow** *software for HP 3000 servers.*

FileNet: WorkGroup is aimed at small companies and workgroups that wish to replace paper and microfilm with electronic images, data and text. Available now, FileNet: Workgroup costs $34,000 for five users.

FileNet: (714) 966-3400.

Groupware guru gazes into industry crystal ball

Q&A The groupware industry is keeping David Coleman busy these days.

Coleman, principal of the San Francisco consultancy Collaborative Strategies, just shipped his latest "GroupTalk" newsletter, is writing his second book about companies that have rolled out groupware the wrong way and last week hosted GroupWare '95, a conference consisting of tutorials and talks about the industry.

Staff Writer Annmarie Timmins caught up with Coleman at the groupware show in San Jose, Calif., last week and talked with him about groupware — its users, vendors and future.

What are groupware users telling you they want?

We just did some research and found several things, some of which were surprising.

The nonsurprising stuff was of the 100 people we interviewed who were using groupware, 95% had it running on Windows. What was surprising was that 50% of them were running it on a Mac client and 38% were running it on a Unix client.

That means a couple of things. One is that the market is heterogeneous. We asked people about their top reasons for buying groupware. They told us again and again they wanted to be able to collaborate with colleagues across different systems.

Basically, people look at groupware as a way to connect and deal with people at a greater depth than just E-mail.

Given that view, what should groupware vendors be doing?

IBM and Lotus are going in the right direction [by running on multiple platforms]. Notes runs on all three of the platforms I mentioned — Windows, Unix and the Mac.

The problem is that it runs reasonably well on Windows and poorly on Unix and the Mac. We're hoping that with Version 4, when IBM and Lotus open the API, things will look better on the Mac and Unix.

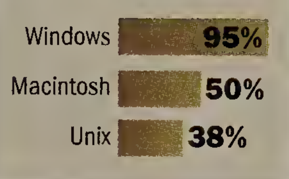
How would you distinguish Notes and Exchange, and where do you think their battle is headed?

In our survey, we asked people if they would use Exchange, and 24% said yes. That's not too surprising. We figured they were making an upgrade from Microsoft Mail, but my guess is Microsoft will probably be the No. 2 player.

Exchange and Notes are not the same kind of thing. I don't know why the media has made a race out of this.

As far as I can tell, Exchange is a service; it provides a number of operating system-level services for messaging and directories. It does not seem to have good replication yet, and it can only do it locally.

Users are running groupware on a variety of client platforms, according to a survey of 100 users by Collaborative Strategies.



What can we expect from other groupware vendors, such as Collabra Software, Inc. and Novell, Inc.?

They are not all going to go exactly head-to-head with Lotus. Nobody wants to take on Notes because it has such a lead. The best way for people to take on Notes is to attack it on a point-by-point functionality basis.

Collabra will attack on a functional level. Borland's Delphi and Microsoft's Visual Basic, two of the development environments, will attack Notes in the rapid prototyping area.

Some of the others will attack Notes on its E-mail. They will claim their function is better because that's all they do, whereas Notes does a variety of those things. ■

SHARED LOGIC

Stop waiting for a network messiah

The passing of Jerry Garcia made me take a step back and think about life for a while.

Not that I'm a Deadhead — in fact, I can't stand the Grateful Dead. But the reaction from that whole community surprised me. It was like their Messiah had died.

What will all these people do? Even if the Dead keeps touring, it won't be the same. Looks like it's time to sell the Volkswagen bus, ditch the inventory of tie-dyed T-shirts, roll up the sleeping bag and get a job. Are any of you readers hiring?

The Dead phenomenon is not that far removed from a similar group of zealots within our own little network computing world. These people have a secret yearning for the days when one vendor ruled the world.

Mike Rothman

How can you spot these folks? Just start reminiscing about the good old days, when you only had to have your IBM rep's number on speed dial and your work was done.

But who is the new Messiah? Gates, Frankenburg, Manzi, Gerstner or Ellison?

Basically, it doesn't matter. Some users just want a catalog of silver bullets, a turnkey infrastructure to remove the dreaded complexity of distributed computing.

I just hope these folks aren't holding their breath. The new Messiah ain't coming, so clear off the extra dinner setting. Realistically, the technology infrastructure must always be evolving and in a state of migration toward new technology.

Furthermore, one vendor cannot win forever. I truly believe in the cyclical nature of everything.

Microsoft, Cisco and other market leaders will stumble sooner or later. Eventually, some upstarts will leapfrog today's leaders and establish a new technology standard. Just be careful when they go public, right Netscape shareholders?

To position for this ever-evolving infrastructure, start thinking in terms of modularity, flexibility and scalability when selecting components, such as network operating systems, messaging products and databases. Also, think a moment or two about migration and coexistence since your legacy platforms won't be going away soon.

If my crystal ball is correct, within five years the directory will be the focal point of the network computing infrastructure, providing access to all network-based resources.

A standard protocol will become the plumbing, providing interoperability between systems and enabling applications to access networked resources, regardless of where they reside.

We'll end up with infrastructure and application components held together by a set of APIs. Which APIs, however, is a good question.

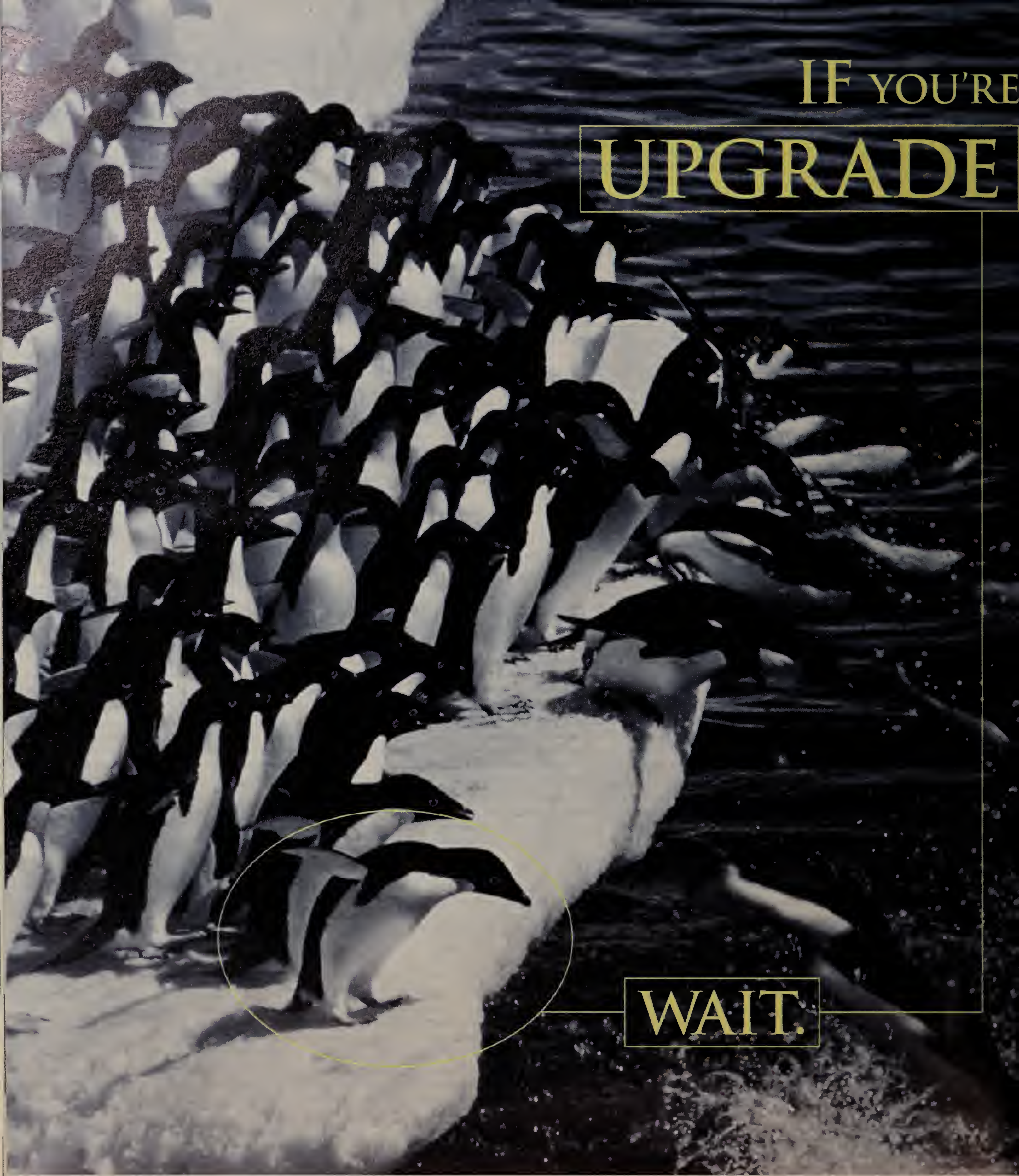
The current set of APIs, including MAPI, SQL and the Common Messaging Calls, will be the lowest common denominators. Expect each vendor to create some secret sauce extensions to the APIs to make their applications work better.

One sure bet is that no one vendor will deliver all the pieces. We need to lose this religious fervor for the next technology Messiah and get down to the business of building an interoperable technology infrastructure.

I guess I'm asking you to become network atheists — not that you shouldn't hope for a day when one vendor has all the answers, but don't bet your job on it.

Bet your job on your ability to implement an infrastructure that can deliver consistent, reliable service levels and contribute to your organization's bottom line.

Rothman is program director of META Group's Global Networking Strategies service in Reston, Va. Feedback is welcome either by E-mail at miker@ metagroup.com or by phone at (800) 622-1108, Ext. 521. Rothman's column alternates in this space with that of Marc Myers, president of Client/Server Connection, Ltd.



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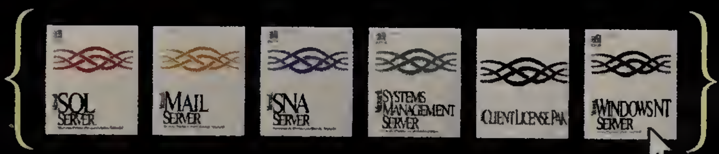

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WHERE DO YOU WANT TO GO TODAY?™

New releases of Web and ATM products hint of what's to come

By Annmarie Timmins

Network products announced or released in the last quarter span the industry, but two things are clear: The call of the World-Wide Web can't be ignored and users are looking for ways to make their networks faster and more powerful.

The Web is attractive to users as a way to make information more readily available over a network internally and externally, and vendors are starting to provide the tools needed to build and browse Web sites.

IBM is readying its MVS Web Server, which will allow users to employ their mainframes as Web sites that are accessible via networked workstations.

The product — which will roll out early next year rather than this summer, as originally planned — is the first of its kind, said Jamie Zartman, an analyst with META Group, Inc., a Denver consultancy.

"What [IBM] is saying is if you make a strategic investment in our iron, we want it to be able to play a roll in the Internet," he said.

Ready to Roll?

IBM plans similar Internet access for its Application System/400 users early next year.

Lotus Development Corp. has also acknowledged the potential power of the Internet, having started shipments this summer of InterNotes Web Publisher and InterNotes News. Some observers say Lotus has little choice but to deliver such products for linking Notes and Web servers because, otherwise, Lotus might find companies going entirely with Web technology for their information-sharing needs.

Zartman said users should soon watch for similar product announcements from third-party vendors soon. Navisoft and The Wollongong Group, Inc. are among the smaller vendors that announced or delivered new Web products during the second quarter.

"Internet announcements are going to continue virtually unabated," he said. "We are in the age of discovery. People are just beginning to understand how easy the Internet is to use. And they are gradually seeing how they can use it for their business applications."

To support the increase in network traffic generated by Web access in addition to other applications, users are also looking to pump up the bandwidth capacity of their nets.

Several companies are nearly ready to release Ethernet and Ethernet-to-Asynchronous Transfer Mode switches to meet such demand.

Digital Equipment Corp. will ship its DECswitch 400 for intelligent Ethernet switching this quarter, while Bay Networks, Inc. has a 100M bit/sec Ethernet backbone switch planned for an October release.

Fore Systems, Inc. and Cascade Communications Corp. this year will ship an ATM campus/LAN backbone switch and an ATM WAN backbone switch, respectively.

New products for ATM are not coming from just the hardware vendors, either. AT&T will offer by year-end its InterSpan T-1 ATM service. ■

BusinessBriefs

Arbor Software Corp. of Sunnyvale, Calif., and **Tandem Computers, Inc.** of Cupertino, Calif., last week revealed plans to jointly develop an Open Database Connectivity driver to link Arbor's Essbase multidimensional database to Tandem's NonStop SQL database. The driver will let developers move data from Tandem-based data warehouses directly into Essbase applications.

Alameda, Calif.-based **Action Technologies, Inc.** next month will announce agreements with **PeopleSoft, Inc.** of Pleasanton, Calif., and **Platinum Software Corp.** of Irvine, Calif., to integrate Action's workflow system with the workflow capabilities being added to PeopleSoft and Platinum applications. According to Action President Terry McGowan, this will enable Action's technology to act as a common workflow engine across various vendors' third-party client/server applications.

Gary Wetsel, president of Scotts Valley, Calif.-based **Borland International, Inc.**, told attendees gathered for the company's annual user conference earlier this month that Borland has cut staff from more than 1,600 to about 1,000 and has pared down advertising and marketing in order to trim its budget. The company has struggled for the past few years but is trying to remain independent, Wetsel said.

There have been rumors of a Novell, Inc. takeover of Borland.

OMG standard paves way for interoperability

The Object Management Group's (OMG) set of standards for interoperability between objects from different vendors drew solid industry support last week at the Object World show in San Francisco.

Common Object Request Broker Architecture (CORBA) 2.0's Internet Interoperability Object Protocol (IIOP) provides the practical multivendor connectivity needed to increase adoption of the standard, according to ORB vendors Iona Technologies, Inc. and Expersoft Corp.

OBJECT WORLD

The OMG had defined portability but had not defined the standard for interoperability. Interoperability is the one that everyone cares about, said Michael Parker, marketing director at San Diego-based Expersoft.

"At last, the ORB vendors have their act together. This week has been proof that the systems have interoperability," said Chris Horn, president of Iona, based in Dublin, Ireland.

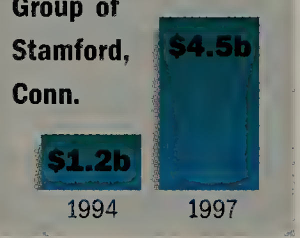
"It's IIOP. Everyone's excited about that," said Jens Christensen, president and cofounder of Post Modern Computing, a Mountain View, Calif., object technology vendor.

The potential for standards-based object interoperability was demonstrated at the show via a computerized version of a Monopoly board game. The game was distributed, using CORBA 2.0, among different vendors' object software running on the show floor.

In addition to progressing on standards, this year's Object World seemed to be more business-like, observers said.

"It's a lot less academic this year. The people showing interest seem to be less leading-edge and more like general computing customers. The credit has to go to the OMG — they've done a great job of education," Christensen said.

The market for object-oriented software is expected to nearly quadruple from $1.2 billion in revenue last year to $4.5 billion in 1997, according to consultancy Meta Group of Stamford, Conn.



These business customers are implementing their object-based applications in an enterprise that typically has Windows at the desktop, and Unix or Windows NT running at the back end, vendors said. This is providing a useful role for CORBA 2.0, which is operating system independent, they said.

Microsoft Corp.'s OLE desktop connectivity standard acts as a software plug that can be linked into a layer of CORBA 2.0 software to provide distributed software services.

"Customers are using OLE at the front end and CORBA to communicate," according to Christensen.

"The key thing for the industry is how well OLE links to CORBA," said Iona's Horn.

It is unclear how long this opportunity will exist. Microsoft has already unveiled ambitious plans to expand OLE into Distributed OLE, to provide a ubiquitous software transport layer for distributed services in the enterprise.

"Microsoft has left the OLE plugs there — I would assume that they intend to do something themselves. Presumably, they will get their Distributed OLE together eventually," according to Horn. ■

Apps development

New COBOL development kit exploits Windows 95

By John Cox
Palo Alto, Calif.

One of the first Windows 95 client/server application development kits to fully exploit the 32-bit capabilities of the new operating system will be for COBOL programmers.

Micro Focus last week announced Visual Object COBOL (VOC) 1.0 for Windows 95. The product is a full, visual development environment for building PC-based client/server applications.

The language itself uses object-oriented COBOL extensions recently introduced by Micro Focus. The tool set will let host COBOL programmers move to PC platforms for building the next generation of distributed departmental applications, said Peter Katz, vice president of marketing at Micro Focus.

COBOL Object Director

A key part of the product is the COBOL Object Director, a mechanism that lets VOC interact with different object models, such as Microsoft Corp.'s OLE 2.0, Smalltalk and C++, and IBM's System Object Model.

Eventually, VOC will allow developers to turn a host COBOL program into an object class and access it from the desktop, according to Michael Gilbert, Micro Focus product development manager for object-oriented products.

The company worked with Microsoft for a year to make VOC a native Windows 95 application.

The combination, and its implementation, is a big reason why Atlanta-based American Software, Inc. (ADI), a COBOL software and services provider and a Micro Focus beta tester, will use the tool set as its future development platform, according to Steve Rabin, ASI's chief technologist.

"It's very elegant. It's rare to get a new operating system and a new development environment that work together without you having to do anything," he said.

Release 1.0, due out in October, is designed to build PC-based graphical user interface applications.

Later releases will add mini-programs that help developers build and connect server-based components. The software will cost $499.

©Micro Focus: (415) 856-4161.

THE ROLL CALL

Product	Company	Product description	Announcement		Original delivery plan	Status
HARDWARE						
28104 Fast Ethernet Switch	Bay Networks	100M bit/sec Ethernet backbone switch	July 1995	🟢	October 1995	On track
Cascade 500 ATM Switch	Cascade Communications	An ATM WAN backbone switch; scalable 2.5G to 10G bit/sec capacity	May 1995	🟢	4Q 1995	On track
DECswitch 400	Digital	Ethernet-to-ATM stand-alone switch	April 1995	🟢	3Q 1995	On track
ASX-200BX and ASX-200BXE	Fore Systems	Next-generation ATM campus/LAN backbone switches	May 1995	🟢	May 1995	Shipping
Vivid Ethernet Yellow Ridge	Newbridge Networks	Originally designed as an ATM LAN emulation gateway, Yellow Ridge has been modified to act as a stand-alone Ethernet switch	July 1995	🟢	July 1995	Shipping; new release in September will include an external SNMP agent
AnyCell ATM25 modules	Optical Data	25M bit/sec modules for Infinity hub	June 1995	🟢	4Q 1995	On track
IGX	StrataCom	Enterprise ATM switch; 1.2G bit/sec capacity with multiple types of interfaces to migrate traditional TDM traffic	June 1995	🟢	June 1995	Shipping; additional interfaces, such as ATM voice, are planned for year end
LinkSwitch 3000	3Com	Six-port fast Ethernet switch	May 1995	🟢	4Q 1995	On track
SOFTWARE						
Open Transport	Apple	Multiprotocol network support for MacOS	January 1995	🟢	Mid-1995	Shipping
Spectrum 3.1	Cabletron	HP-UX version of distributed management platform	June 1995	🟢	Within 60 days after receipt of order	Shipping
CiscoWorks Blue	Cisco	SNA/LAN internetwork management software	July 1995	🟢	September 1995	On track
Forte Release 2.0	Forte Software	Object-oriented fourth-generation tool set and repository for high-end client/server applications	July 1995	🟢	4Q 1995	On track
OpenView Network Node Manager 4.0	HP	Client/server version of network management software	June 1995	🟢	October 1995	On track
AS/400 Web Server	IBM	Web server for AS/400	June 1995	🟢	1Q 1996	On track
DataHub for Unix	IBM	Unix-based adminstration tool for managing Oracle, Sybase and IBM relational databases	October 1994	🟢	August 1995	On track
DB2 Parallel Edition	IBM	Parallel database for IBM's RS/6000SP computer	May 1994	🟢	September 1995	On track
MVS Web Server	IBM	Mainframe Web server	June 1995	🔴	3Q 1995	To ship 1Q 1996
OnLine Extended Parallel Server 8.0	Informix	Database that adds support for SNMP clusters and MPP parallel-processing platforms	July 1995	🟢	August 1995	On track
CommServer	Lotus	Messaging engine for Notes and, optionally, cc:Mail	August 1993	🔴	Late 1994	Server and X.400 support to ship 4Q 1995
InterNotes Web Publisher and InterNotes News	Lotus	A tool that links Notes to the Web	January 1995	🟢	May 1995	Shipping
Lotus Script 3.0	Lotus	An object-oriented programming language	June 1995	🟢	4Q 1995 as part of Notes 4.0	On track
NotesView	Lotus	Graphical tool for managing and monitoring a Notes network	January 1995	🟢	2Q 1995	Shipping
Microsoft Exchange	Microsoft	Client/server, Windows NT-based update to Microsoft Mail	June 1994	🟢	Late 1995	On track
Windows 95	Microsoft	Multithreading, 32-bit update to Windows 3.1	4Q 1993	🟢	Mid-1995	Shipping this week
Windows NT 3.5X	Microsoft	Net operating system with revised, Windows 95-like user interface	May 1995	🟢	End of 1995	On track
NaviServer and NaviPress	NaviSoft	Web server and publishing tools	June 1995	🟢	Summer 1995	On track
Oracle Power Objects	Oracle	Visual Basic-like client/server development tool	January 1995	🟢	March 1995	Shipping
OmniReplicator	Praxis International	A two-way data replicator between multivendor source and target databases	October 1994	🔴	March 1995	Available in July on Oracle; August on Sybase
Eagle Lite 1.0	Raptor Systems	Internet firewall	March 1995	🟢	2Q 1995	On track; product name changed to Eagle Firewall 3.0
TSAPI driver	Siemens Rolm Communications	PBX-to-NetWare translator utilizing Telephony Services API	March 1994	🔴	1Q 1995	Will ship 3Q 1995
Sybase IQ	Sybase	Query accelerator that works with the company's database to speed up large data warehousing applications	November 1994	🔴	Summer 1995	Due 4Q 1995
Sybase MPP	Sybase	An add-on to Sybase's SQL Server database that supports massively parallel-processing computers	September 1994	🔴	Fall 1995	Due end of 1995
Emissary	The Wollongong Group	Windows-based Internet browser and file manager	June 1995	🟢	August 1995	On track
SERVICES						
Global X.25	AT&T	9.6K to 56K bit/sec dial-up and dedicated X.25 access to U.S.-based AT&T frame relay networks via Infonet Services Corp. links	June 1995	🟢	4Q 1995	On track
InterSpan T-1 ATM	AT&T	Low-speed (T-1) access to AT&T ATM broadband public backbone	Spring/ summer 1995	🟢	4Q 1995	On track
Limited-Size Messaging-based CDPD	AT&T's McCaw Cellular Communications Wireless Data Division	Messaging capabilities integrated with Cellular Digital Packet Data (CDPD) transport service	July 1995	🟢	1996	On track from McCaw; undergoing standards review by CDPD Forum
Network Demand Printing Service	AT&T	Means for publishers to ship electronic content to distributed locations, then print and bind there via AT&T partners' equipment	June 1995	🟢	1Q 1996, pending success of trial	On track
AT&T Network Notes	Lotus	Public network-based Notes network	March 1994	🟢	Late summer 1995	On track
National Switched Digital Services Database	Center for Communications Management Information (CCMI)	Current listings for ISDN pricing	February 1995	🔴	April 1995	Delayed indefinitely; CCMI having trouble getting timely formatted data from RBOCs
Low-speed ATM	Sprint	ATM service at T-1 speed	January 1994	🟢	3Q 1995	Available
Nationwide caller ID	All long-distance carriers	Delivery of calling party's telephone number on non-800 connections	March 1994	🔴	April 1995	Expected December 1995

🟢 Shipping or on track to ship by original date 🔴 Behind original shipping schedule and not yet shipping

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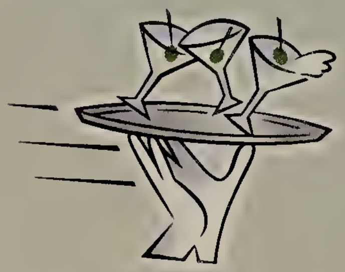

He attends a swank party
where he's offered a job in Hong Kong.

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Electronic Commerce

Covering: Tools and Techniques for Interenterprise Networking
and Doing Business On-Line

Briefs

■ **The American Bankers Association (ABA)** *issued an encryption policy paper stating that the financial community wants to continue using the* **Data Encryption Standard** *beyond 1998, when the U.S. government will cease certifying it for bank use. The ABA cited the cost of moving to any new standard the government may propose. The group also voiced its opposition to plans the government is considering requiring storage of encryption keys outside the financial institution.*

■ **ZyLAB, Inc.** *has shipped a Windows NT Web server called* **ZyIndex for Internet** *that has a text-search tool for retrieving documents based on word or word combinations using a standard HyperText Mark-up Language browser. For more information, contact ZyLAB at (301) 590-2760.*

■ *The* **General Accounting Office (GAO)** *has taken aim at the Department of the Treasury's $8 billion Tax Systems Modernization program to automate the processing and storage of* **one billion annual tax return documents.** *The GAO said the Treasury Department should expand its focus beyond third-party filing of simple tax returns to include more complicated tax returns.*

■ **Toyota Corp.,** *which traditionally exchanged CAD files on floppy disk or magnetic tape by mail with its car-components suppliers, next month will install CTI Communications, Inc. FastSync Hub software running on the RS/6000. The software will link a network of CAD workstations to send and receive* **CAD files by modem.**

■ **MediaShare Corp.** *has developed a new version of its ProductBase publishing software for* **on-line catalogs** *that lets them be displayed on the Web as well as on CD-ROM.*
MediaShare: (619) 931-7171.

MasterCard, Visa try to secure the 'Net

Credit card firms to reveal security plan to cut risk of doing business on the Internet.

By Ellen Messmer

Because Internet credit card transactions are considered risky business, Visa International, Inc. and MasterCard International, Inc. charge high fees to World-Wide Web merchants.

But the network security plan the two credit card associations will unveil next month is intended to reduce that risk by providing a standard way that Web browsers or other software can encrypt credit card numbers and send them off to card-processing networks and banks.

No industry-backed end-to-end Internet card-processing method now exists as it does for traditional merchant point-of-sale equipment and networks.

Consequently, even Web software capable of handling encrypted credit card information over the Internet today, such as Netscape Communications, Corp.'s Commerce server and browser, are viewed as high-risk.

When an encrypted card number lands at a Web server, it's decrypted so it can be manually processed through a POS device or phoned in for approval — and it's here the risk of fraud arises.

"Two-thirds of credit card fraud is committed by customers and the other third by merchants," said Jeff Treuhaft, Netscape's product man- ager. "The credit card business is based on taking on risk. And in today's Internet environment, the merchant faces the kind of high rates associated with what the credit card firms call 'purchaser not present.'"

However, when the public-key encryption MasterCard-Visa technology is implemented in Web software and card-processing networks, it will allow consumers, retailers, banks and third-party processing networks to authenticate their identities to each other as part of the credit card validation process.

The bottom line for Internet merchants will be far lower credit card fees, according to both Visa and MasterCard.

"The risk associated with open networks will be significantly less with the standard," according to Visa spokesman David Melacon.

The credit card associations intend to certify and brand Web software to let consumers know they are accessing a MasterCard-Visa-approved Web site or the so-called Electronic Courtyard that Visa envisions (*NW*, Aug. 14, page 8).

Visa and MasterCard will continue to process credit card transactions sent over the 'Net in other ways but will charge merchants higher fees to process them than if they adhere to the security specification.

Already, Netscape has said it will support the security spec through a new line of Web servers and browsers called Secure Courier. The back-end processing will likely be handled by firms such as Checkfree Corp.

Checkfree executives David Torgerson and Jim Moran said the company is closely following development of the security spec and plans to support it.

According to Internet merchants, the MasterCard-Visa effort is an important step to help them expand 'Net retailing and hold down costs.

"We look to Visa and MasterCard to establish security levels the retailing industry can be comfortable with," said Laura Simpson, director of business development at catalog company Hammacher Schlemmer, Inc., which sells consumer goods from two Web sites: the Internet Shopping Network and marketplaceMCI.

While Visa and MasterCard expect to see Web software providers and the card-processing industry get behind the security spec by the beginning of 1996, the banks still have to weigh in on it.

"The banks still have to examine the specification to perform due diligence," said Frank Jaffe, senior systems consultant at Bank of Boston. ■

BUSINESS SPACE

The Internet and my septic system

"So which Internet access provider is the best one around here? I need to get a decent connection to the 'Net," said Frank Sr.

Frank Sr., treasure hunter and drain specialist extraordinaire, was visiting our new house to try and figure out how our septic system was actually laid out.

Those of you who read my column regularly will recollect that we just moved into our dream house. No sooner were we in when the septic system stopped working — perhaps collapsed would be a better description.

Mark Gibbs

Since then, we have been inundated with an endless procession of plumbers, septic system specialists and now, treasure hunters, all of whom seem to be computer nerds.

Our visiting expert determined that our run to the leach line (that's technical sewerage talk) went straight for 16 feet and seemed to come to a dead stop. He then dug up the area in front of our 2-year-old's playhouse, which caused an emotional problem that I don't want to go into.

He figured out that at the point of no go the pipe was crushed. He concluded that we'd need to call back his son, Frank Jr., (and before you say anything, Ventura, Calif., is sometimes described as Arkansas By The Sea), who had recommended him in the first place.

As he packed up his now rather odoriferous gear, we got talking about computers. He'd been a crane operator for years before an accident forced him to retire, and now he spends his time investigating problem drains and sewerage, hunting for treasure in the Caribbean (honestly) and playing with his somewhat exotic computer system. Now he wanted to get onto the Internet.

And Frank Sr. wasn't the only one to have a passion for computing and networking.

Kevin, who came to talk about remodeling our kitchen, had CAD as well as 3-D rendering software and was thinking of upgrading to a Pentium-based screamer. He was very interested in what the Internet might offer in the way of technical support.

Then came Jim, an architect who was not only Internet literate, but knew a lot more about graphics hardware than I do.

The list of people who have been around to fix, install, analyze, advise or just drop by to have dinner and who are not in the computer business but know about the Internet is a long one.

This parade of people made me aware of how shortsighted we are in the computer business. I have been to so many conferences and seminars where MIS types, managers, chief information officers, chief executive officers and consultants have argued vehemently that the Internet's consumer population will be small for a long time to come.

Yet here I was with plumbers, butchers, bakers, candlestick makers and people in a dozen other trades and professions who all typify consumer markets, talking about the Internet and advanced PC technology!

Mark my words: Within three years, we will see an incredibly broad spectrum of users surfing the 'Net. (Sorry about the use of the "surfing" metaphor, I couldn't help myself.) Moreover, all of these plumbers, lawyers and Indian chiefs won't just be doing it for fun — they'll be using it for their business advantage.

So, if you want to know about the 'Net, don't ask me, ask your plumber. Or mine. Any of them.

Gibbs is a consultant and writer based in Ventura, Calif. He can be reached at (800) 622-1108, Ext. 504, or on the Internet at mgibbs@rain.org.

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NW821

Technology Update

Keeping Up with Network Technologies and Standards

NETWORK HELP DESK

Network World *tracks down answers to your questions. Please submit them to Dana Thorat via phone at (800) 622-1108, the Internet at djt@world.std.com or fax at (508) 820-1103.*

What's the current status of legislation in California regarding legal validity of digital or electronic signatures? Are other states enacting similar legislation? What's happening with this issue on the federal level?

Shervin Gabayan via the Internet

Benjamin Wright, author of *The Law of Electronic Commerce,* Second Edition (Little, Brown and Co., 1995) says California bill A.B. 1577, which would permit digital or electronic signatures to be used in transactions with the state government, is still pending.

The bill does not address use of digital signatures in private contracts, however. The wording of the bill appears to be broad and flexible, possibly accommodating many signing technologies, including biometrics and cryptography.

As for what other states are doing, Wright explained that Wyoming enacted a bill that permits the secretary of state to set rules that will clear the way for digital signatures on electronic documents filed with state government.

Wyoming's bill was silent on types of technologies that can be used, thus opening the door for a mix of methods.

Utah recently adopted the pioneering Digital Signature Act, which grants special legal status to documents signed using tightly defined cryptographic methods.

At the federal level, various laws have been amended or interpreted to accommodate electronic signing. For example, the Securities and Exchange Commission allows plaintext ASCII signatures on electronic corporate reports filed in accordance with SEC rules.

To receive an article comparing computer signature technologies, send E-mail to bwrigh01@counsel.com.

For additional information concerning related articles and on-line seminars, point your Web browser at http://www.infohaus.com/access/by-seller/Benjamin—Wright or send E-mail to 74774.1326@compuserve.com.

Advanced routing spec clears net paths

High Performance Routing technology runs on existing hardware, interoperates with SNA and APPN products.

By Wendy Arnette, Ralph Case and Kim Murray

To meet the needs of today's complex and changing network environments, a special interest group of the APPN Implementers Workshop, a vendor consortium, recently approved a specification for an advanced, open technology that quickly and smoothly routes data.

The technology, called High Performance Routing (HPR), combines the best features of Advanced Peer-to-Peer Networking, frame relay, IP and Systems Network Architecture. For instance, it draws on the nondisruptive rerouting capabilities found in IP as well as the congestion-control and class-of-service features of SNA to provide improved network performance and more efficient use of bandwidth.

This means that with HPR, network managers do not have to worry about physically rerouting sessions during link failures. Since HPR has built-in rerouting capabilities and supports SNA priority and class-of-service features, important data is able to move through the network quickly.

What's more, HPR takes advantage of today's faster, higher quality lines and positions networks for a smooth transition to Asynchronous Transfer Mode. And, like frame relay, HPR provides a transport for the integration of multiprotocol traffic through any net.

HPR runs on existing hardware — routers, workstations, concentrators and gateways — and interoperates seamlessly with existing SNA and APPN products. In addition, HPR class-of-service routing will be mapped to ATM quality-of-service parameters so SNA users can take advantage of ATM simply by installing new adapters.

A technology trio

HPR uses three technologies to deliver these improvements in routing data: Rapid Transport Protocol (RTP), Automatic Network Routing (ANR) and Adaptive Rate-Based (ARB) congestion control.

RTP is a connection-oriented protocol that supports data transfer in high-speed networks. When an initial request for a network path is made, RTP sets up the end-to-end connection and creates the routing information.

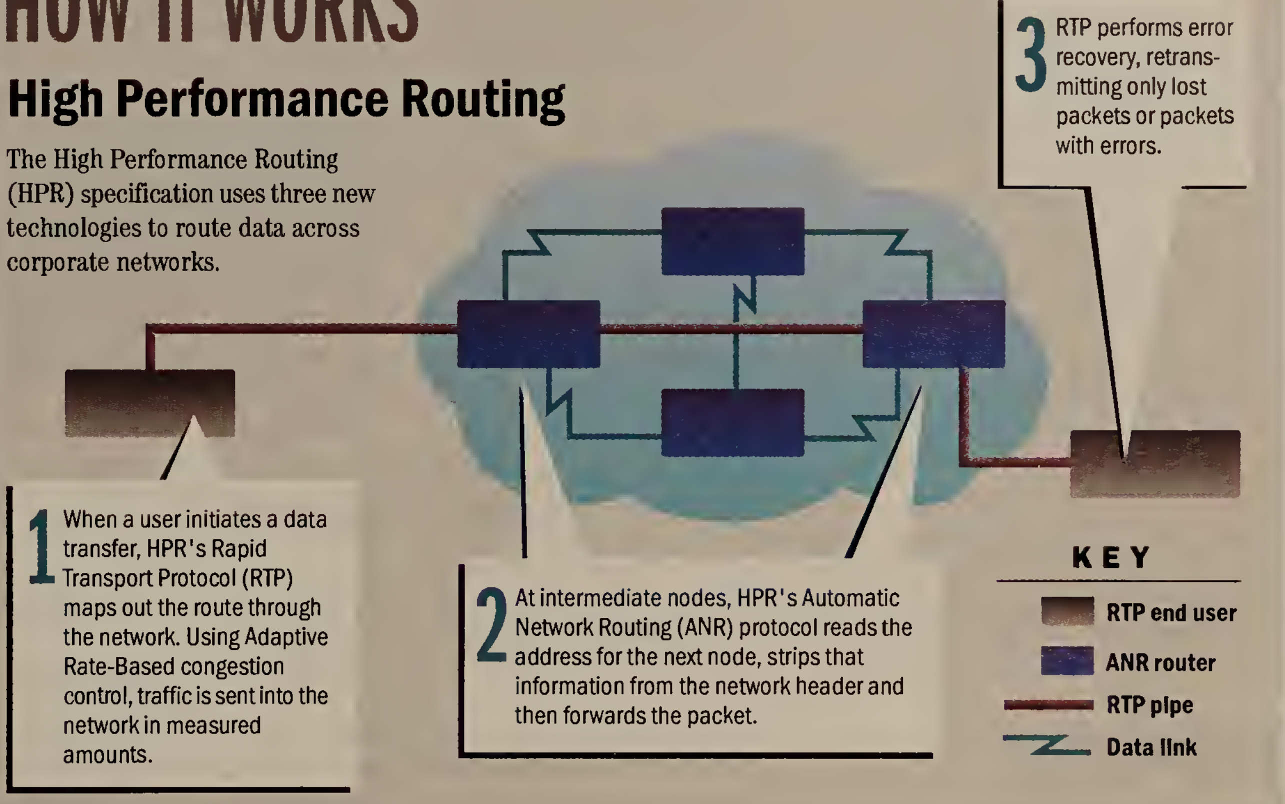
The protocol maps out the route from end to end and uses a technique called nondisruptive path switching to ensure that the data arrives at its intended destination. If an error occurs, RTP detects the failure and dynamically recalculates the network path.

If a node or link fails, the RTP connection's physical path is switched automatically to reroute sessions around the failure. Any data that was sent over the network at the time of failure is automatically recovered.

HOW IT WORKS

High Performance Routing

The High Performance Routing (HPR) specification uses three new technologies to route data across corporate networks.



1 When a user initiates a data transfer, HPR's Rapid Transport Protocol (RTP) maps out the route through the network. Using Adaptive Rate-Based congestion control, traffic is sent into the network in measured amounts.

2 At intermediate nodes, HPR's Automatic Network Routing (ANR) protocol reads the address for the next node, strips that information from the network header and then forwards the packet.

3 RTP performs error recovery, retransmitting only lost packets or packets with errors.

RTP also improves network performance by doing away with error recovery at every node in the path. It eliminates the extra processing time and intermediate buffer requirements by performing error recovery only at the endpoints of the RTP connection.

The protocol selectively retransmits only lost packets or packets with errors. For example, if Packets 2, 3, 4 and 5 are sent across the network and only Packet 3 is lost or corrupted, then it alone will be resent.

With high-speed, low-error-rate media, RTP's error recovery mechanisms help decrease network traffic and increase the amount of usable bandwidth.

Within the net

ANR is a streamlined, connectionless protocol that is used in the intermediate nodes of an HPR subnet.

With HPR, each data packet sent through the network contains the complete address for the entire route. At the intermediate nodes, ANR reads the address for the next node, strips that information from the network header and then forwards the packet.

Since the RTP endpoints determine network path, session setup and error recovery, the ANR node has no reason for session awareness. This provides a clean, efficient way to route data at high speeds. In addition, ANR supports prioritization for SNA and multiprotocol traffic.

The third HPR technology, ARB, is a proactive mechanism for controlling congestion between the RTP endpoints. By constantly monitoring and adjusting the amount of data flowing between those endpoints, ARB flow control ensures that the destination node is not overloaded and prevents network congestion.

Essentially, ARB sends data into the network in measured amounts rather than in uncontrolled bursts. The result is more efficient use of bandwidth and better performance carrying heavy network traffic. In addition, ARB allows two or more HPR connections to share common links fairly, based on priority levels and link availability.

HPR in the market

In June, IBM made available the first HPR products with VTAM Version 4 Release 3 and Network Control Program Version 7 Release 3. The company will continue to deliver HPR-based products throughout the next six months on its controllers, routers and gateways, and the 2217 Multiprotocol Concentrator will provide the ability to support the transport of multiple protocols across a single HPR backbone.

Other major networking vendors, including Bay Networks, Inc., Cisco Systems, Inc. and 3Com Corp., are expected to offer HPR-based products. Bay Networks will introduce HPR in Version 10 of the Wellfleet router software due out by year-end.

Arnette is SNA networking advisor, Case is APPC/APPN architecture manager and Murray is HPR brand manager for IBM at Research Triangle Park, N.C.

EDITORIAL INSIGHTS

Madonna of the desktop

The debut of Windows 95 has become a cultural phenomenon — sort of like Madonna — and like Madonna, maybe it's gotten a little overexposed.

Windows 95 presents a dilemma for the network manager: to upgrade or not to upgrade. Administrators must weigh new functionality against the time and equipment cost to upgrade every desktop. Our story "Migrating to Win95," on page 40, explores some of these issues in great detail.

Suppose you decide to take the plunge and upgrade your desktops. You really should consider all the 32-bit alternatives. On page 43, we take a hands-on look at Windows 95 and OS/2 Warp Connect as network clients. Your users can argue all they want about which interface they prefer and which architecture is more object-oriented; we'll tell you what we found about connectivity and administration issues.

Maybe you want Windows 95 so you can access The Microsoft Network, visit the Internet using the Spyglass-licensed Mosaic browser, implement peer-to-peer services or try the Exchange messaging client. We surveyed our readers to discover what components they're planning to use. The results, given in one of our news stories, show a level of caution that indicates Microsoft's advertising and PR machine can't overrule common sense.

After having used Windows 3.1, Windows 95, Windows NT Workstation and Warp Connect, I have my own opinions on what I'd like to use. I also have ideas on what would be best for my organization, and that is not necessarily the same thing. However, here's some advice I would pass on to any organization:

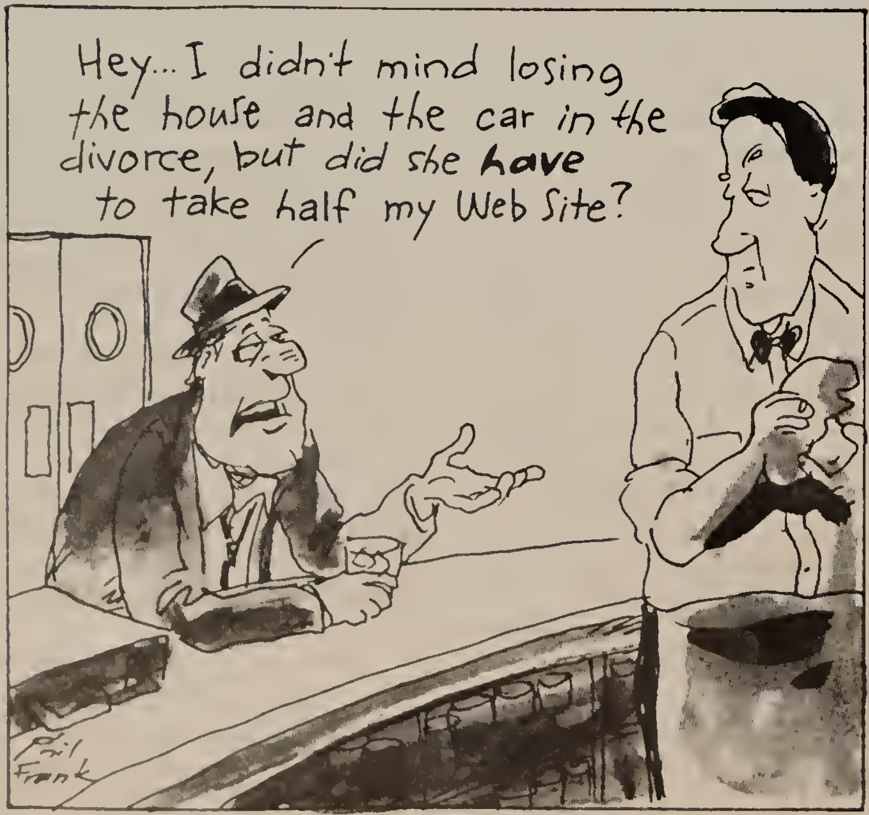
First, be certain that the desktop operating system you choose is one you can live with, given your current budget and staffing levels, and don't change just for change's sake. Otherwise, you'll have to suffer with an OS that chafes and pinches or roll out a new OS in a few months, doubling your cost and aggravation.

Second, the needs of your organization may differ from those of the company down the street, meaning a different answer to the upgrade question is perfectly appropriate. Treat any new OS rollout as you would the installation of a critical new application: with a pilot project followed by phased implementation. The only difference is, while you may have a compelling business need for that new application, there's really no obligation to install any new desktop OS immediately. For some organizations, the best choice may be no change at all.

Lee Schlesinger lschlesi@nww.com

Teletoons

By Phil Frank and Joe Troise
guru@well.com


Hey... I didn't mind losing the house and the car in the divorce, but did she have to take half my Web Site?
Phil Frank

SPEAKING THE LANGUAGE

Windows 95 looks like a 'Very Good Thing' for net managers

Linda Musthaler

I recently met an IS professional who categorizes everything as either a Good Thing or a Bad Thing. Put in those terms, Windows 95 is a Very Good Thing for network managers.

In case you're the rare bird who has not already tested Windows 95, here's a sampling of what to expect.

First of all, the installation process is fairly automatic and shows definite improvements over Windows 3.X. Using autodetect, a part of its new Plug and Play feature set, Windows 95 attempts to recognize each desktop's configuration, thus allowing the OS to install itself for optimal use. The software may still require occasional intervention to help it get all the settings correct, but it cuts down on the amount of time required to set up hundreds or even thousands of workstations.

Companies with heterogeneous network environments will appreciate Windows 95's built-in support for industry-leading servers and NOSes, including NetWare, Windows NT Advanced Server, LAN Manager and LAN Server. The OS supports the user's network client, protocol and driver, as well as multiple protocol stacks. The 32-bit networking architecture provides the means for users to be connected to multiple networks simultaneously, without loss of client memory. What's more, the 32-bit code means all of this network connectivity is fast.

> *Windows 95 takes good care of end users who must constantly take the show on the road.*

Recognizing Novell's lion's share of the networking business, Microsoft incorporated very good support for NetWare environments into Windows 95. A 32-bit native client for NetWare offers users access to NetWare services and, within 90 days of Windows 95's ship date, support for NetWare Directory Services.

Many network managers that I've talked with are excited about Windows 95's Dynamic Host Configuration Protocol (DHCP). DHCP eliminates the need to physically assign IP addresses by automatically assigning each endstation an address on startup. Administrators who currently must manually assign the addresses anticipate that Windows 95 will reduce the administrative overhead generated when end users move or other network changes occur.

Be aware, however, that DHCP could conflict with the implementation of virtual LANs that are only IP address-based. Network managers may have to make a choice between DHCP and virtual LANs in order to achieve the ultimate goal of simplifying network moves, adds and changes.

Windows 95 takes good care of end users who must constantly take the show on the road. The OS has built-in client software for popular remote access and remote node servers, including Windows NT Remote Access Services, NetWare Connect and Shiva's LANRover and NetModem. Remote users can call directly into a Windows 95 machine on the LAN or use a remote node server to connect as a node on the LAN.

Mobile users will also appreciate Windows 95's Plug and Play features, which detect when a portable computer has been connected to or disconnected from a network. By automatically loading or unloading network drivers as appropriate, Windows 95 eliminates the need to reboot the laptop in order to be recognized as a network node and reduces the errors that occur when a network node has been unexpectedly removed from the LAN.

Plug and Play offers great potential for desk-bound users, as well. Windows 95 uses this mechanism to collect configuration information from the desktop and its peripherals to pass along to an SNMP console. However, since PCs and other devices such as modems and printers have to be specifically architected to support Plug and Play, this feature's full benefits may not be realized for several years.

Windows 95 has a lot of useful mini-applications built into it, as well. The controversial Microsoft Network on-line software is grabbing all the headlines, but there are other applications that should make the network manager's job easier.

For instance, the OS includes the front-end software needed to allow workstations to back up a server, facilitating the task of having users back up their own PCs. Windows 95 also includes network management and diagnostic programs that help net managers monitor and troubleshoot problems at the client, network or server level.

Of course, despite all these nice features, network managers will still encounter integration problems that require outside technical support.

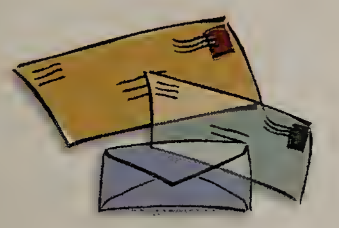
When this is the case, get out your checkbook because technical support won't come cheap.

Microsoft has said it will charge for all support calls related to Windows 95's use on a network. There is no grace period for free support — you pay as you go from the first day that Windows 95 hits the streets. Companies with more than a few dozen desktops will probably find it more cost-effective to get a long-term support contract from Microsoft or some other service provider.

In response to the anticipated requests for support, Microsoft devised the Windows 95 Resource Kit, which includes a deployment guide and planning template, a business analysis tool for guesstimating the cost of moving to Windows 95 and a technical reference manual. The kit is available at no cost from Microsoft; call (206) 882-8080 for more information.

I spoke with one network manager who is in the midst of rolling out Windows 95 to thousands of workstations. Initially, he was hesitant to deploy Windows 95 so early in its life cycle, but he had no choice; it was a management decision. Now, after working with the OS for a while and discovering its benefits, he's the one pushing for full deployment. Looks like Windows 95 is shaping up to be a Very Good Thing indeed.

Musthaler is vice president of research at Currid & Co., a Houston-based information technology consulting firm. She can be reached at (713) 789-5995 or via the Internet at musthaler@ngwgate.mhs.compuserve.com.



IN-BOX

CNE still counts

Some comments regarding Ben Rothke's column on Microsoft certification vs. the Certified Novell Engineer (CNE) program (July 24, page 35):

Rothke states that Windows NT 3.5 has 15% of the NOS market. According to International Data Corp. (IDC), NT had only 6% of the file server market at the end of 1994. Rothke says NT will be "big cheese by 1997." IDC projects a 15% market share for NT by the end of 1997.

Rothke says that "Novell has failed miserably to get its flagship NetWare 4.X and NetWare Directory Services [NDS] into large-scale use." He claims that sales are below Novell expectations. In fact, NetWare 4.1 sales have exceeded Novell's expectations. Forrester Research, Inc., Computer Intelligence InfoCorp, Inc. and Sentry Market Research all predict Novell's NDS will win the network directory war.

NetWare 4.1 gives users a single point of access to all network information and resources. It gives administrators a single point of administration, saving companies time and money. This contrasts with NT Server, which lacks a single point of administration. An enterprise NT network is extremely difficult to construct and manage from an administrative point of view.

Technicians looking to hold a niche position should go for a Microsoft Certified Professional degree. Certainly NT is going to be around and will occupy a small share of the market. People looking to maximize their options for employment should stick with Novell's CNE.

Sure, a lot of paper CNEs have aspired to the certification without attaining experience. We'll doubtlessly see the same thing occur with NT. Employers, though, are not foolish. As with an undergraduate degree, the CNE shows a certain level of commitment and dedication to the profession. Any sensible employer looks for experience and references when making an important personnel decision.

Steve Kaplan
President
RYNO Imaging Systems, Inc.
Benicia, Calif.

Rothke replies: Mr. Kaplan based his figures for NT and NetWare 4.X on IDC and other research firms. I based my data on firsthand experience visiting the data centers and speaking with the decision makers at scores of Fortune 500 companies in the New York City area. Everyone I spoke with agreed that NT has taken market share from NetWare. The immense question is how much it will ultimately capture. Many insiders agree that it will be a huge amount.

I was not focusing on which NOS has superior services; I was focusing on corporate purchasing momentum. And at this point, NT is moving quickly. After all is said and done, we all agree the three most important things for a network professional are: experience, experience and experience.

Both certifications needed

Ben Rothke was only partially correct in his views on which certification to go for and how meaningful Novell's certification process is.

I feel the well-prepared network professional will be certified by both Microsoft and Novell. As Microsoft continues to build its market share in installations of both applications servers and file and print servers, there will be an enormous need for capable individuals to integrate the NetWare and Microsoft product sets. This calls for expertise in both product lines.

Secondly, it appears Rothke is not aware that Novell has not only changed its certification requirements to be product-line specific, but the testing methods used have changed, as well. Many of the tests are now performance-based and require that candidates not only have the ability to fill their gray matter with facts, but also to perform the same types of functions they would at a customer's site.

This, in my mind, will eliminate the paper CNEs, particularly during the recertification process. Those people who only memorize the answers will quickly discover that they can no longer function as a CNE. It is clear to me that Novell has recognized the negative aspects of its old testing methods and has corrected the majority of inadequacies with its new testing methodology.

I plan to obtain both Microsoft and Novell certification. However, I will certify first under Microsoft, as I strongly believe that is where the market is headed — and the job opportunities that go with it.

Scott Youlden
Project leader
Ciba-Corning Diagnostics Corp.
Medfield, Mass.

Give pioneers their due

I agree with Ben Rothke that Microsoft certification will get you places faster in the market today. I have earned both Novell and Microsoft certification, and I am leaning more toward Microsoft certification.

However, it's important to remember that in the mid- and late-1980s, the Novell and Banyan VINES certifications were the only standards in the industry since these were the only true NOSes that addressed the network realm. Many of the people who earned Novell and Banyan certification during that time were and still are considered network gurus — or should I say networking pioneers — and most if not all have at one point done beta testing for the newer NOSes that are on the market today.

So it's not really fair to discount these old-time CNEs, some of whom have been in the business for 10 to 15 years or more, along with the paper CNEs.

R.T. McKinney
Independent consultant
McKinney Consulting
Reston, Va.

Rothke replies: It was never my intention to group paper CNEs with those network wizards with over a decade of experience. My opinions were focused on those newer to the field.

CNE agrees

I wholeheartedly agree with Ben Rothke. I was one of the first 5,000 CNEs, and up until the last four or five years, I was very proud of the certification. After more than 11 years in the network profession, I have come across far too many paper CNEs and no longer wish to be identified with them. I have even gone so far as to remove the CNE suffix from my business cards and replace it with my now year-old Microsoft Certified Systems Engineer (MCSE) designation.

I now require that all of my LAN support staff attain their MCSE designation within 18 months of employment and am considering requiring my programming staff to reach a similar goal with the new Microsoft programmer certification.

Scott Rynd
Vice president, information management services
American Contractors Insurance Group, Inc.
Dallas

More info, please

I found Ben Rothke's column on Microsoft vs. Novell certification very insightful.

One thing missing was how to get more information on Microsoft Certified Professional certification — courses and skills required, testing and so on. Can you help?

John Raabe
Network admininistrator
Kieffer & Co., Inc.
Sheboygan, Wis.

Editor's note: For information, contact Microsoft at (800) 426-9400.

How to reach us

CALL: (508) 875-6400
FAX: (508) 820-3467
WRITE: *Network World,* 161 Worcester Road, Framingham, Mass. 01701
INTERNET: network@world.std.com
MCIMAIL: 390-4868
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Windows 95
hits the enterprise

MIGRATING *to* WIN95 *takes dollars and sense*

Proper planning will reveal the considerable up-front costs for Win95 but also the long-term projected savings.

By Charles Bruno

James Choi isn't convinced his Chemical Bank unit should move to Windows 95.

Choi, a technology officer with the New York City-based banking conglomerate, thinks Microsoft Corp.'s new 32-bit operating system is difficult to cost-justify and believes the product will be short-lived.

"There has to be a compelling reason to make the move," Choi says. "[But] it's not easy to measure the productivity gains [Microsoft] promises. And once [Windows] NT gains the Windows 95 interface, there won't be any advantage."

As a result, Chemical is taking a wait-and-see attitude with Windows right now, Choi says.

He is not alone. Win95 has its share of fence-sitters, many of whom seem spooked over the sizable up-front costs involved in making the migration and skeptical that the operating system will deliver the significant savings Microsoft promises.

"Even with a volume-user discount, this is going to be an expensive proposition," says David Rora, a systems operations specialist with the Washington, D.C. law firm Dickstein Shapiro & Morin LLP. "The ancillary costs are significant."

Indeed they are. A report produced by the Stamford, Conn., consulting firm Gartner Group, Inc., estimates companies will spend $527 per user to upgrade from Windows 3.1 to Win95. That's almost double the cost to upgrade from Windows 3.0 to Windows 3.1 (see graphic).

Those projections take into account the operating system upgrade licenses, installation, training, testing and technical support costs. Hardware and applications upgrades are extra. A lot extra.

Gartner estimates the applications upgrade at $736 per user, or 54% more than the cost of upgrading applications from Windows 3.0 to Windows 3.1. That assumes an upgrade of three applications, along with administrative, training and technical support labor expenses, plus installation and support costs.

That means a company migrating, say, 1,200 users to Win95 will face estimated operating system upgrade costs of $632,400 while the cost of upgrading applications will be $883,200 (see graphic, page 45).

And estimates for upgrading PC hardware with increased memory or fatter disk drives range from about $300 to more than $500 per unit.

Money well spent

Even with significant up-front expenses, Microsoft — and the consultant community — believe Win95 will deliver the goods in the form of significant savings from reduced technical support costs and improved productivity.

"The Gartner Group rule-of-thumb for any investment is to get back your money within two years," says Bill Kirwin, a Gartner Group vice president and author of the seminal report on desktop operating system cost-of-ownership. "With Win95, we think most organizations will get their money back within 15 months."

"All the indications I've had from customers is this is a quick payback," says Jeff Thiel, group product manager in Microsoft's Personal Systems Division.

Microsoft also is quick to point out that the same Gartner Group report suggests Win95's ease-of-use features will result in a substantially lower five-year cost-of-ownership — $35,859 per user for Win95 vs. $41,439 for Windows 3.1. Win95 also tops IBM's OS/2 Warp, which weighs in at a little more than $38,000 for a five-year cost projection, according to the report. The comparison takes into account capital, technical support, administration and operational cost factors, including training.

Cost comparisons like that have network/IS departments scurrying to size up their desktop hardware requirements, planning for IS staff and end-user training, mulling outsourcing arrangements for some migration tasks, and weighing the unpredictable impact of the operating system on homegrown and third-party applications.

"Win95 is the whole enchilada — it's the OS, the file system and the networking woven together," says Microsoft's Thiel. "You're asking for trouble if you don't have a plan for addressing Win95 when it ships."

That plan should take into account the major cost components of the transition: the cost of Win95 system software; labor costs associated with upgrading to the operating system and applications; plus expenses tied to help desk operations, user training and the technical support required to test Win95 in corporate environments.

Windows 95 upgrade costs

(price per user)

	Windows 3.0 to Windows 3.1	Windows 3.1 to Win95
Operating system	$267	$527
Applications	$477	$736

SOURCE: GARTNER GROUP, INC. STAMFORD, CONN.

Soft costs

Talk to Microsoft about pricing for Win95, and the company is quick to point out that resellers set the street price. Still, Microsoft quotes a minimum advertised price of $89 for the operating system upgrade — a tactic that discourages resellers from entering into a price war. By all accounts, upgrade pricing will range between $89 and $109.

For many Fortune 500 companies and other volume users, discount plans apply. But beware, Microsoft's volume purchase agreements are tied closely to the company's license plans — a convoluted assortment of deals that specify purchase quotas, with sliding discounts tied to overall purchases and support programs (see story, next page).

And don't forget the Win95 Plus package, which bundles compression, automated agents and an Internet Explorer scripting program, for $50 per user.

The hard facts

Software pricing issues aside, most users, analysts and network integrators agree that hardware upgrades is a hot topic for users migrating to Win95.

"Here is where the chickens come home to roost," says Rob Enderle, senior industry analyst for client/server software at Dataquest, Inc. in San Jose, Calif. Enderle says companies that installed off-brand PCs could well find they lack the specific drivers or other components that Win95 requires. "It's very important to conduct extensive amounts of testing. I wouldn't be surprised to find a few IS managers trying to explain why they made some of these PC purchase decisions."

CHRIS BENNION

"You're asking for trouble if you don't have a plan for addressing Win95 when it ships."
Microsoft's Jeff Thiel

But other hardware issues transcend compatibility concerns. Users and network integrators that have worked with Win95 beta releases say the product requires 16M bytes of memory on a 66-MHz 80486-based PC.

"If you want Win95 to run smoothly, then you make that kind of upgrade," says Frazier Pless, a technical analyst with the Houston Division of Paranet, Inc., an independent network integrator. Pless has evaluated Win95 for an aerospace company's 3,000-node enterprise net comprising Windows NT and Novell, Inc. NetWare 3.11 servers.

"There are still a significant number of PCs on corporate desktops today that don't have the memory to run Win95 effectively," adds Roger Hackett, a technical analyst in Paranet's New Orleans division. "For those companies that haven't killed off their 386 machines, this [Win95] will do it for them."

Microsoft refutes that claim. Officially, the company says Win95 can run on a PC with as little as 4M bytes of memory. "How much memory you need depends on what you're trying to do with the system and how many applications you run," Thiel says. Companies moving to a 32-bit suite of applications that also support enterprise E-mail and scheduling likely will want 16M bytes, he says.

Most consultants agree the cost to upgrade PC memory and hard-disk subsystems will range from $300 to $500 per system. But many companies likely will not retrofit older machines, according to Gartner Group's Kirwin.

Gartner Group says that Win95 and its 50M-byte size will strain many installed 200M-byte hard drives and push users to 340M- or even 500M-byte drives. Another avenue may be to relocate storage of some files or applications to a server, for downloading across the net to target workstations. However, Kirwin advises companies to analyze the impact of such a move on network traffic patterns.

Hidden costs

While the impact of Win95 on corporate desktop hardware configurations can be clearly seen, less evident is the effect the operating system will have on the installed base of third-party and homegrown applications currently running in 16-bit mode on Windows 3.1 desktops.

Microsoft's position is that existing Windows 3.1 applications will make the transition. "With few exceptions, applications will run just fine; in fact, they will run better," Thiel says. Some Windows 3.X applications — such as interface, file system and font utilities — will not run by design.

Larry Melamed, an advanced systems engineer with Electronic Data Systems Corp., is one user who has noticed a squeeze in applications performance with Win95. Melamed says Microsoft's Exchange, Office 4.2, Word for Windows 6.0, Excel and Powerpoint, Digital Communications Associates, Inc.'s IRMA WorkStation for Windows 2.2.0, and Netscape Navigator 1.2 have all run noticeably slower under Win95 with 8M bytes of memory vs. 16M bytes.

Jesse Berst, the editorial director of "Windows Watcher Newsletter," an industry publication based in Redmond, Wash., says custom applications will likely pose problems.

"Corporate developers don't work with the same rigor as [independent software vendors]," Berst says. "They use unusual techniques and unauthorized shortcuts and hacks to get to old legacy code and a variety of techniques that make compatibility more difficult to maintain."

Applications that go out and check for Windows 3.X as the underlying operating system will not run, according to Paranet's Pless. "[But] my experience has been that 90% of the 16-bit applications will run," he adds.

Pless' colleague, Ron Argo, a senior technical analyst in Paranet's Atlanta office, says some homegrown applications may need modification. "If you've broken the rules of writing to Windows, you'll have to do some adjustments with Win95," Argo says. He cites applications written to custom calls as an example of software routines that Win95 will reject.

Adds David Kearns, a former network administrator and a long-time NetWire newsgroup systems operator, "Where you may get into trouble is with DOS-based applications which were written to manipulate the hardware to gain a performance edge. These programs are likely to fail miserably."

If software compatibility issues don't drive up your costs, upgrading to 32-bit applications likely will.

The majority of applications developers are sinking their development dollars into 32-bit programs, according to industry consultants. That means it's only a matter of time until users are forced to upgrade to Win95, since vendors likely will abandon enhancements to Windows 3.X products once Microsoft's support for the environment starts to wane. Users say vendors already are using the arrival of Win95 to squeeze out extra applications revenue.

"Where Microsoft originally said Office 95 would be a recompile, in the nine months it's been delayed, it's gained lots of new features," Rora says. "So it's not a straight substitute. There will be incremental upgrade costs and training costs. I think Microsoft is being very greedy with its $249 upgrade price [for Office 95]."

Race to embrace

If Win95 is expected to strain the applications infrastructure of large enterprises, consider what demands it will place on training.

Of 400 sites surveyed by International Data Corp. (IDC), 42% expect to upgrade to Win95 when it becomes available. And those sites expect to migrate in half the time it took to cut over to Windows 3.1, according to IDC.

"Corporate support and training people are going to be paying a price," in terms of keeping up with demands made on internal help desks, technical support and training, says John Gantz, a senior vice president with IDC. Gantz believes the race to

Continued on page 42

A lesson in licensing

Microsoft's Select licensing program for Windows 95 seems straightforward at first glance. The company offers three license options: an open agreement, a variable contract and an enterprise arrangement. But that's where the simplicity ends and you encounter a whirlwind of quotas, a complicated menu for picking system software and applications, and enough product pools to leave your head swimming.

The Select program's enterprise license provides the highest level of discount and is the option best suited for large corporations, according to Rob Enderle, senior industry analyst with Dataquest, Inc.

Under the enterprise license, "a company is basically agreeing to buy a license for every computer and employee," says Lars Johansson, director of organizational licensing at Microsoft. That means companies do not have to track the number of licenses floating in the enterprise, he says, and Microsoft does not impose the confusing product pool quotas found in its other license options. A company may opt for an enterprise license for just a department, a division or other operating unit, Johansson says.

The variable license is a more complicated beast. It revolves around a customer's two-year product procurement forecast, which becomes a buying commitment. But customers also vie for price breaks along the way for purchases that apply to specific product pools — applications, systems software and servers — with a sliding volume discount for purchases of 1,000, 3,000 or 7,000 units.

So, if you purchase 6,000 units of Win95, you receive a mid-tier discount. Units are defined as credits toward the purchase of license upgrades, new licenses or maintenance plans; a single-user Win95 license equals one unit. Johansson would not elaborate about specific discount ranges.

A more simplified option is Microsoft's open license, which lets buyers qualify for prices breaks based on their up-front buying volume. Microsoft offers discounts for 50-, 500- and 1,000-unit increments.

"This is particularly suited for smaller companies or organizations that don't wish to make the forecast commitment," Johansson says.

One catch with Select licensing is that Microsoft will jack up Windows maintenance prices by 45% to 55% as of Oct. 1 for variable and enterprise licenses, Johansson says. Maintenance options generally provide you with automatic software upgrades over the life of the two-year pact.

In essence, the increase may spur fence-sitters to move to Win95 more quickly. Win95 licenses signed prior to the price increase will keep the lower maintenance rates, Johansson says.

Continued from page 41

embrace Win95 will create a significant revenue opportunity for Win95 training suppliers, who will be ready to step in as IS shops seek to farm out some tasks to third parties to alleviate the internal crunch.

From a training standpoint, Microsoft plays up ease-of-use features of its new user interface, as well as help utilities that guide the user and help make the product more intuitive. Microsoft claims the new interface results in a tenfold improvement in the execution of operating system tasks such as opening applications.

A usability study conducted for Microsoft found that after only 20 minutes of self-guided exploration, users were equally productive on Win95 as they were on Windows 3.1. And, after an additional 90 minutes, they were able to do similar tasks in 55% of the time. The same Microsoft-backed study suggests it takes just 35 minutes to install Win95.

"Don't believe that at all," says IDC's Gantz. IDC's research, based on interviews with a few dozen Fortune 500 companies, indicates companies will budget 3 hours for Win95 installation and 4 hours of formal training per user. Gartner Group suggests five hours of training for each user, plus lots of help desk handholding to learn the new features.

Adds Paranet's Hackett, "Training is a significant issue for this migration. Microsoft has given us a well-designed interface, but it's so different from before, the average user will choke on it."

Robert Burton, a vice president with ReCor Corp., an Evanston, Ill., training software provider, argues that some end users may need a lot more training than estimates suggest. "[Win95 is] almost a different philosophy in doing things," Burton says. "It's almost easier for a new user to learn Win95 than to convert a Win 3.X user."

One topic ReCor drills into new users with its NBT for Windows 95 program is long file name support. "Our philosophy is to teach the user about long file names but to encourage them to initially use the shorter file names because it will help maintain compatibility with Windows 3.1 users who are accessing the same files over the net," Burton says.

Technical support tune

Similar to its position on Win95 training, Microsoft says Win95 includes a number of built-in features that will ease the burden on technical support staffs.

The operating system's new graphical interface should help users navigate on their own, while embedded Plug-and-Play technology eases the chore of configuration tracking and simplifies upgrades.

That's because the operating system will automatically load drivers and inform applications about new capabilities. The built-in client support for Windows NT and NetWare servers will make it easier for central IS departments to keep tabs on distributed desktop systems.

IF YOU'VE GOT THE TIME

Support organizations will require about 400 person-hours to test and qualify the Win95 operating system and drivers and to train help desk personnel to deal with new features.

Some analysts believe the gains Win95 offers technical support staffs may be negated by the increasing complexity on the user's desktop.

One issue to consider is the applications load Win95 will bear. While older Windows 3.X PCs run an average of 11.9 applications, Win95 desktops will run 15 or more, according to IDC. Supporting all those applications, many linked via OLE 2.0 or middleware, could strain corporate and third-party help desks.

However, a study of 12 help desks at Fortune 100 companies conducted by Workgroup Technologies, determined that Win95 will provide substantial help desk savings for high-volume users.

The report shows that in a round-the-clock help desk environment, users should see a reduction in PC help desk calls of between 7% and 15% annually due to Win95's ease of use. A site with 8,500 PCs can expect to eliminate 1,120 calls per month for a potential savings of $22,400 per month, according to the report.

The Workgroup Technologies report goes on to estimate a significant reduction in the number of calls that will require a technician to visit the user's site. Win95 features — such as remote management, remote communications access, hardware and software Plug-and-Play support,

See **Migrating**, *page 45*

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Desktop OS championship

When the bell rings after the last round, Windows 95 stands tall.

By Howard Marks and Kristin Marks

"Ladies and gentlemen, welcome to the World Computing Association Middleweight Champeenship. In the blue trunks, from Armonk, N.Y., weighing in at Version 3, OS/2 Warp Connect! In the red trunks, having missed its weigh-in and avoided version numbers entirely, from Redmond, Wash., by way of the Windy City, Windows 95!"

Corporate network managers are awaiting the outcome of this slugfest of networked 32-bit operating systems. Microsoft Corp. Windows 95 presents migration challenges to the network administrator, but its network integration is tighter and more flexible than IBM OS/2's.

Under Windows 95, users can browse the network for resources and see NetWare, Windows NT and other servers all in the same window. Thanks to user profiles, users can also have their own set of application icons and Windows desktop, even if they share computers with other users or move from PC to PC.

Systems administrators can use Windows 95's systems policies to control user access to applications and the network, as well as to define users' abilities to modify their desktops. Tomorrow's networks will need more robust administration tools no matter which of these two desktop operating systems you choose, but you'll be able to cope longer with Windows 95.

As a basic platform for application execution, OS/2 has long provided the sophisticated memory protection and multithreading features that Windows 95 is just bringing to the market. In fact, Warp can run current Windows applications in protected memory spaces with preemptive multitasking, meaning Warp takes the processor away from a task if the task has had it longer than some allowed time slice. In Windows 95, a task keeps control of the processor as long as it wants.

In the Microsoft family of client operating systems, only Windows NT Workstation offers preemptive multitasking. Warp is arguably the best platform for running today's applications. Unfortunately, it is hamstrung by its lack of support for tomorrow's 32-bit Win32 applications, performance bottlenecks and lack of administrative tools.

Making connections

But the major disappointment with Warp Connect is the lack of integration of critical components, such as Novell, Inc.'s NetWare Requester for OS/2 Version 2.1. While including the requester in the box and producing an integrated install program is a step in the right direction, it's not the smooth integration Microsoft achieves with its NetWare requester in Windows 95.

Warp Connect users may connect to both a NetWare Server and a LAN Server, a Warp Connect peer server, Windows NT Server or other Server Message Block (SMB) server, but they must use separate tools on each server for browsing and accessing print queues and network volumes.

By contrast, Windows 95 allows a user to view various types of file servers as equals through the Network Neighborhood. NetWare, Windows NT and other servers appear with the same icons and are browsed in the same way.

Warp Connect's NetWare requester has some unique features that take advantage of Warp's virtual DOS/Windows feature. A user, employing a virtual DOS session in a workstation — or local session in OS/2-speak — can log on to a file server under a different user ID, taking a unique network connection and using different drive mappings.

Since each virtual DOS session can support a copy of Windows 3.11, these different sessions can also run Windows applications. However, this local session feature relies on a special version of the NetWare shell that does not support NetWare 4.X's NetWare Directory Services (NDS).

Because NetWare uses different logon scripts for DOS and OS/2 systems, NetWare administrators have to maintain two sets of logon scripts on servers that support both DOS/Windows and Warp workstations.

Windows 95 comes with its own NetWare logon script processor, but it can't load TSRs from NetWare scripts. This is a handicap for sites that use TSR-

NetResults

Product	OS/2 Warp Connect	Windows 95
Pros	▲ Protected execution of Win16 apps. ▲ Support for NDS. ▲ Local logon sessions for DOS boxes. ▲ Better peer-level security.	▲ Good performance. ▲ Integration of network requesters. ▲ Management tools for administrators.
Cons	▼ Lack of integration. ▼ Lower performance. ▼ Lack of station management tools.	▼ Lack of NDS support. ▼ Lack of native applications.
Network support	TCP/IP, NetWare, LAN Server, LAN Manager, Windows NT, VINES	TCP/IP, NetWare, LAN Server, LAN Manager, Windows NT, VINES (VINES is supported either with DOS real-mode drivers or the Banyan requester now in late beta)
Minimum configuration	8M bytes memory, 386SX, 90M bytes disk space	4M bytes memory, 386DX, 70M bytes disk space
Memory available for DOS apps	499K bytes	608K bytes
Contact information	IBM Dept. 563 11400 Burnet Road Austin, Texas 78758 Phone: (800) 342-6672 (415) 855-4329 URL: http://www.ibm.com	Microsoft Corp. 1 Microsoft Way Redmond, Wash. 98052 Phone: (800) 426-9400 (206) 882-8080 URL: http://www.microsoft.com
Price	$299	$109.95 as update to Windows, Windows NT or OS/2; $209.95 as update to DOS

Continued on page 44

Continued from page 43

based metering products.

On the plus side, Warp Connect's peer file services performed about as well as the Windows 95 file and print services and had a significantly more flexible security structure. Whereas Windows 95 uses simple passwords to shared directories or an external Windows NT or NetWare server for user-level control, Warp Connect's peer services support local users and groups on the Warp Connect system.

This provides greater granularity of access permissions, allowing the administrator to grant several more permissions than Windows 95 allows. It also provides auditing capabilities to track user access to shared local resources — something Windows 95 is lacking.

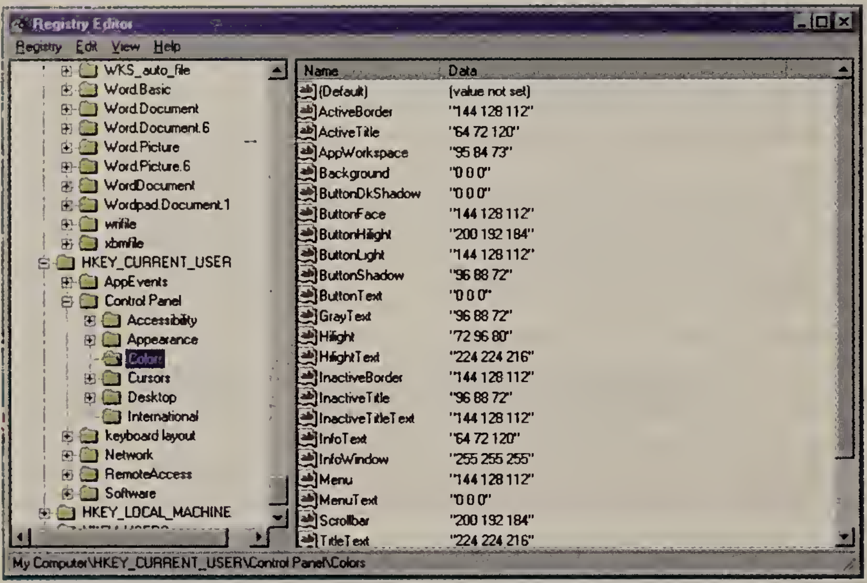
Both products make Internet access easy. Warp's Internet access component is part of the Bonus Pack that's included with the product. Windows 95's Internet Explorer, a Web browser based on Spyglass, Inc.'s NCSA Mosaic, is part of the Microsoft Plus package, sold separately from Windows 95.

Speed and the 'Net

Another major disappointment was in Warp Connect's performance. Warp Connect — used as both an SMB client accessing a Windows NT server and as a NetWare client — was significantly slower than Windows 95 in our testing. Depending on the record size, Windows 95 was 30% to 500% faster than Warp Connect in network access. Even the Workplace Shell, OS/2's object-oriented user interface, seemed slow.

We suspect that the user interface sluggishness would be aided by additional memory, but both operating systems are supposed to work on machines with 8M bytes of memory, and we tested both on the same 12M-byte machine.

The Warp Connect installation program is close to intolerable. It took us 3 hours to perform a basic installation, compared to 34 minutes to install Windows 95 over DOS. During the install process, Warp reboots the workstation several times. Lack of activity on several installation screens made us think the system was hung up. Windows 95 also reboots during installation but has the good sense to indicate a heartbeat instead of a hung-up system.



Registry Editor

Registry Edit View Help

- WKS_auto_file
- Word.Basic
- Word.Document
- Word.Document.6
- Word.Picture
- Word.Picture.6
- WordDocument
- Wordpad.Document.1
- wrifile
- xbmfile
- HKEY_CURRENT_USER
  - AppEvents
  - Control Panel
    - Accessibility
    - Appearance
    - Colors
    - Cursors
    - Desktop
    - International
  - keyboard layout
  - Network
  - RemoteAccess
  - Software
- HKEY_LOCAL_MACHINE

Name	Data
(Default)	(value not set)
ActiveBorder	"144 128 112"
ActiveTitle	"64 72 120"
AppWorkspace	"95 84 73"
Background	"0 0 0"
ButtonDkShadow	"0 0 0"
ButtonFace	"144 128 112"
ButtonHilight	"200 192 184"
ButtonLight	"144 128 112"
ButtonShadow	"96 88 72"
ButtonText	"0 0 0"
GrayText	"96 88 72"
Hilight	"72 96 80"
HilightText	"224 224 216"
InactiveBorder	"144 128 112"
InactiveTitle	"96 88 72"
InactiveTitleText	"144 128 112"
InfoText	"64 72 120"
InfoWindow	"255 255 255"
Menu	"144 128 112"
MenuText	"0 0 0"
Scrollbar	"200 192 184"
TitleText	"224 224 216"

My Computer\HKEY_CURRENT_USER\Control Panel\Colors

Figure 1: *Windows 95's registry editor puts a graphical front end on configuration changes.*

Windows 95's installation was significantly smoother. An administrator can place a copy of Windows 95 on the file server for users to install themselves, either to their local hard drives or for use as a shared copy of Windows on the server. The administrator can also write installation scripts to automate the setup process.

Warp Connect can be installed from a server volume, but it requires that the network administrator have a shared CD-ROM drive and create different sets of boot diskettes that will vary with the different drivers (such as for video cards or Small Computer System Interface disk controllers) on each workstation.

Network functionality

Unless you use NDS, Windows 95 builds in all the network functionality that an administrator wants. The memory management hassles of previous versions of Windows are vastly reduced because all the old, standard TSRs are now modules of the operating system that run in protected mode memory.

The whole memory management debacle in the DOS/Windows environment is over. There's no more need for writing compatible NET.CFG and CONFIG.SYS files; all this is replaced by information stored in the registry, Windows 95's hierarchical database of system configuration information.

Warp solves this problem by running DOS as a session under OS/2. OS/2 provides most of the services that were provided by TSRs or DOS device drivers, such as command-line editing and network connectivity. As with Windows 95, this reduces the RAM cram problem, but it also requires that all resources, such as network requesters, be provided by OS/2 drivers.

While Windows 95 replaces most of the TSRs with 32-bit drivers, it still supports 16-bit drivers, so users can access a file server even if the NOS vendor never develops a Windows 95 requester.

Today, Windows 95 provides support out of the box for NetWare and Microsoft LANs, including NT Server and LAN Manager. In the near future, expect to see requesters from Banyan Systems, Inc. for VINES, Digital Equipment Corp. for Pathworks and SunSoft, Inc. for Network File System networks. These 32-bit clients are currently in beta test. Warp Connect already supports VINES, Pathworks and Unix today.

Windows 95 is happiest when dealing with network cards through 32-bit Microsoft Network Driver Interface Specification (NDIS) drivers, but because it still supports 16-bit TSR DOS device driver modules, you can use old packet drivers, Open Datalink Interface drivers or anything else that supports DOS. OS/2 requires 32-bit drivers.

NetWare 4.X NDS users have to run Windows 95 with Novell's Virtual Loadable Modules or wait for either Novell's or Microsoft's 32-bit requester. Both are promised 90 days after the Aug. 24 release of Windows 95. Under Warp, NDS is supported for OS/2 and global DOS sessions that share a common connection to the file server.

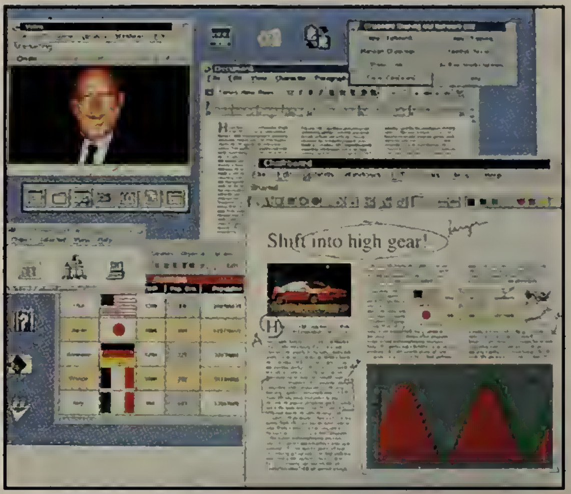


Figure 2: *A view of the OS/2 Warp Connect shell.*

Windows 95's network integration starts during installation, when the setup program asks if you want it to look for network, sound and video capture cards. Windows 95 automatically recognized our video card, network card and network card configuration. By default, the Microsoft client driver is installed if you have a network card. You can select the NetWare NDIS client either instead of or in addition to the Microsoft networking client and specify a preferred server attachment through Control Panel.

Warp asked us similar questions during installation but failed to recognize our Tseng Laboratories, Inc. ET4000 Super VGA card and offered 640x480 pixels and 16 colors as our only screen resolution choice. On a subsequent screen, we saw our video driver listed and were able to select it after the fact.

We were asked to select our network card from a list, then Warp Connect claimed to have automatically detected it. We tested this step by selecting the wrong network card driver. We were told that Warp Connect had also detected that driver, even though that was not possible. It repeated this charade with the network card configuration, where it had the intelligence to detect only the default values for the network card, not the values we were using.

After telling Warp we had no multimedia capabilities, it annoyingly copied .WAV sound files to our drive anyway.

If you're upgrading from previous Windows versions to Windows 95, your Program Manager groups are converted to groups in the Start menu, the Windows 95 replacement for Program Manager. There is no equivalent function in Warp. Users must manually search the hard drive for applications.

Windows 95 uses universal time and is aware of time zones. The installation program lets you point to your location on a map to select the right time zone. This becomes important later when, if you have two users on a WAN, Windows 95 knows which copy of a modified file is the more recent one.

During Windows 95 installation, users are prompted for their name, the first eight characters of which become the machine name for use in NETBIOS environments, and company name, which becomes the workgroup name. The comput-

Continued on page 45

Installation sins

IBM commits one of the cardinal sins of installation: It starts by copying several files from the installation CD-ROM to the hard drive, then performs the first of several reboots. In our tests, after rebooting, the CD-ROM was no longer accessible because the driver for the CD-ROM drive wasn't activated after the reboot.

We manually fixed this problem and then called IBM tech support to see how they would handle the question. We spent the first 20 minutes of the call setting up our tech support relationship with IBM. We were asked to choose a 9-hour window during which we would be allowed to call for tech support. Corporate accounts will not tolerate this restriction on support.

Our call lasted over 70 minutes, and IBM's technicians poked around the problem but never actually fixed it.

HOW WE DID IT

We tested both OS/2 Warp Connect and Windows 95 on a generic clone 486 DX/2 66 with 12M bytes of memory, a Tseng Laboratories, Inc. ET4000-based Super VGA card, an Adaptec Corp. 1522 SCSI host adapter and a Standard Microsystems Corp. Elite 16 Ethernet card. Identical Seagate Technology, Inc. 125M-byte IDE hard drives were used for both operating systems. The systems were connected to a Micronics Corp. 486/33 EISA file server running NetWare 3.12, a CEC, Inc. Cycube 486/33 running NetWare 4.1 and a Cycube 486/33 running Windows NT Server.

We used each client operating system to connect to servers running both Windows NT Server and NetWare. We tested performance using Testnet 2, a shareware benchmark that uses DOS calls to read files, write them or both 4,096 times per test. Each test consisted of both sequential and random reads, as well as writes of 123-, 512- and 4,096-byte records to a simulated database.

We avoided subjective evaluation of the operating systems' user interfaces in order to concentrate on their networking and network administration features.

Review

Continued from page 44

er's description is the user's full name. All these can be changed later in Control Panel.

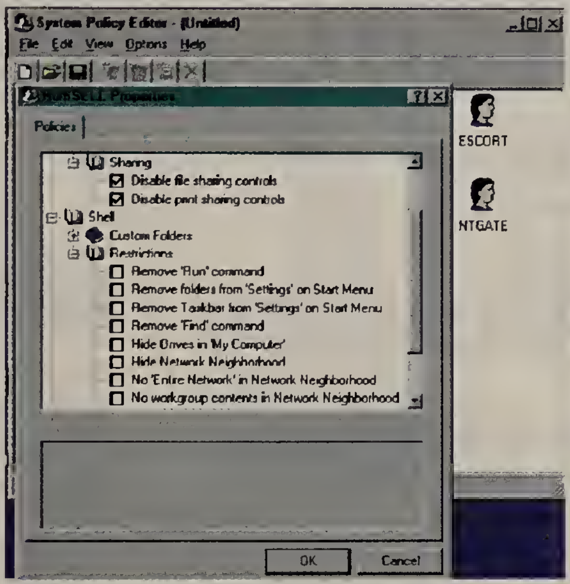
User profiles can be copied to NetWare SYS:Mail directories, which are guaranteed to be available in NetWare 3.X environments, so administrators can provide some centralized control. Because Windows 95 connects to the network prior to loading the interface, if a profile exists in the Mail directory, it becomes the active profile, overriding any profile on the local drive. This guarantees that a user can have his fluorescent orange wallpaper no matter which workstation he logs on from.

There is no equivalent function in Warp. Desktop information is stored on the local drive, so when users move from machine to machine, they lose their customizations.

Because some of the files that make up a user's profile have and require long file names, administrators must enable long file name support on NetWare servers. Ironically, you do this by loading OS/2 name space support NetWare Loadable Modules.

Warp Connect was a disappointment in its lack of user interface and station management tools, such as Windows 95's user profiles and system policies.

While its Workplace Shell is somewhat more object-oriented than Windows 95's user interface — for example, it allows users to move an application from one directory to another without resetting the icon — Warp Connect doesn't provide any tools to help net administrators manage users' stations and applications.



Sharing
- ☑ Disable file sharing controls
- ☑ Disable print sharing controls

Shell
- Custom Folders
- Restrictions
  - ☐ Remove 'Run' command
  - ☐ Remove folders from 'Settings' on Start Menu
  - ☐ Remove Taskbar from 'Settings' on Start Menu
  - ☐ Remove 'Find' command
  - ☐ Hide Drives in 'My Computer'
  - ☐ Hide Network Neighborhood
  - ☐ No 'Entire Network' in Network Neighborhood
  - ☐ No workgroup contents in Network Neighborhood

Figure 3: *The Windows 95 system policy editor lets administrators centrally control users and groups of users.*

The Windows 95 system policy editor comes on the installation CD-ROM but must be specifically installed (see Figure 3). It is not a multiuser utility, so although you could install it on a network drive, only one administrator should be changing policies at any given time.

Policies control what users and groups are allowed to do. It's sort of like the Restrictions section from Windows 3.X PROGMAN.INI but on steroids. The registry, containing all the configuration information for each system, is built at logon time. User and system data combined, with the current effective policies, are resolved into the registry. Changing policies means that the next time each user logs on, the registry will reresolve and the changes will be reflected at each workstation. The registry can be changed through the Control Panel, but there is also a registry editor for direct and remote edits. It is extremely cryptic and not for the faint of heart or hex-illiterate.

Windows 95 does not provide the ability to edit groups of user profiles en masse. Administrators must wait for third-party tools or build their own innovative batch files. However, this is still an improvement over Warp, where a similar profile feature just doesn't exist.

While net printing in Warp Connect is much like printing from Windows or DOS, Windows 95 provides some interesting new features. There is no longer an artificial limitation to three printer ports in Windows 95. Administrators define printers, represented by icons, through a single selection. Banner pages print by default, but users can turn them off.

Windows 95 supports Microsoft's File and Print Services for NetWare, which turns a local Windows 95 system into a NetWare Core Protocol server. Network users can then print to printers attached to other Windows 95 systems without the hassle of Novell's RPRINTER or NPRINTER TSRs.

Sadder but wiser

We were surprised by how little we liked OS/2. There were no management tools equivalent to Windows 95's user profile or system policy editors and no centralized control functions. There is a systems-setting applet that uses a notebook metaphor, complete with a spiral down the side, but it is for local control only. Warp Connect builds a Novell icon that includes some menu-based user tools for mapping drives, attaching to file servers and connecting to printers.

Little things in Warp, such as how to shut down the system, are far from intuitive. According to Help, you click in the empty area and then click the second mouse button. Is that the right or the middle mouse button?

Despite a great ad campaign, Warp loses this round in the fight for the corporate desktop to Windows 95 because of poor performance, lack of net integration and lack of management tools.

Under the hood, OS/2 may be better, which is why techies like it so much, but the user interface and network performance makes it the victim of a TKO for corporate use. ■

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 39.

Kristin and Howard Marks are principals of TigerTeam, a South Norwalk, Conn.-based consulting firm specializing in migrating clients to 32-bit user operating systems. They can be reached via E-mail at hmarks@pipeline.com.

Migrating

Continued from page 42

the user and configuration registry, and improved network and systems security — all contribute to reductions in on-site technician visits through centralized access, control and diagnostics.

Using the same model of 8,500 PCs, the consultancy suggests there will be a 30% to 50% reduction in the number of calls needing a site visit. This corresponds to an elimination of 1,948 calls per month, generating an estimated monthly savings of $389,600.

Less tangible are support costs associated with setting up Windows 95 clients to operate over the enterprise network. According to Paranet's Argo, these costs can amount to one of the largest migration expenses for Win95.

For companies that deploy Win95 nodes in a Windows NT network, the connection to the net will be seamless, he says. But there are a host of issues to consider for those connecting to Novell, Inc. NetWare nets: Where the applications will run, how Win95 clients access the data, and what calls are supported between the client and the server operating system.

"There are a number of old, inefficient system calls that are still supported by legacy DBMSs running on these networks," according to Argo. "That alone can cause a tremendous amount of traffic on the net."

Some of these legacy systems also may slow down Windows 95 clients' SLIP and PPP facilities, Argo says.

Technical support accounts for 17% of the total cost of end-user computing and is an area that is chronically underfunded, according to the Gartner Group cost-of-ownership report.

Win95 looks attractive on this front, coming in at a cost of $1,245 per user annually, a 12% improvement over Windows 3.X, the report says.

Gartner cited Win95 as having the lowest asset management and security costs of the systems evaluated — $980 per user annually, which is 19% less than Windows 3.X and 15% less than Macintosh.

And, at $840 per user a year, Win95 sported the lowest end-user operations costs (which include training) of any operating system evaluated.

The bottom line, according to Gartner Group's Kirwin, is that Windows 95 is priced at least $1,116 less per user per year than Windows 3.X.

The long view

What it all amounts to, Kirwin says, is a long-term view on a major investment. "You're trading a higher up-front capital investment for a lower long-term technical support cost," he says.

Still, for some users, that may be a tough pill to swallow. Dickstein Shapiro & Morin's Rora says his company's decision to migrate ultimately will rest on hardware issues.

"If we have to double the memory on top of our systems to get the full benefits of [Win95], that's one hell of a concern to us at almost $300 a throw."

Windows 95 cost-of-ownership analysis

	Unit cost	Company cost
OPERATING SYSTEM UPGRADE COSTS (1,200 users)		
Administrative costs		
Windows 95 upgrade cost	$50/user	$60,000
Purchasing department labor (6 hours)	$35/hour	$210
End-user costs		
Installation (1 hour per user)	$50/user	$60,000
Training (8 hours per user)	$400/user	$480,000
Support department costs		
Product review and testing (400 person-hours)	$50/hour	$20,000
Hot-line support calls (18 min./user)	$35/hour	$12,600
Total Windows 95 upgrade		**$632,810**
APPLICATION COSTS (1,200 users)		
Administrative costs		
Application upgrade cost (3 at $100 each)	$300/user	$360,000
Purchasing department labor (12 hours)	$35/hour	$420
End-user costs		
Installation (1.5 hours per user)	$75/user	$90,000
Training labor (7 hours per user)	$350/user	$420,000
Support department costs		
Product review and testing (150 person-hours)	$50/hour	$7,500
Hot-line support calls (7.5 min./user)	$35/hour	$5,250
Total application upgrade costs		**$883,170**

SOURCE: GARTNER GROUP, INC., STAMFORD, CONN

Argo says, "From our standpoint, the costs all come out in the planning. If you bring Win95 in-house for a trial, you'll start to see how it will interact with some of your critical business applications.

"We like the product, there's no doubt it will bring savings; you just have to realize the up-front investment that's required," he added. ■

WIN95 HITS THE WEB

There are dozens of Win95-related pages on the World-Wide Web, many of which offer access to free-ware and advice-filled bulletin boards. We've established hot links to a few pages. Point your Web browser at http://www.nww.com/win95.html to get started.

Briefs

Sybase, Inc. *and* **Price Waterhouse Management Consulting Services** *have teamed up to offer* **data warehouse** *systems integration. The two firms will help customers develop and implement data warehouse applications using Sybase's Warehouse Works product. Price Waterhouse joins roughly 50 other vendors in Sybase's Warehouse Works Alliance program.*

Sybase: (510) 922-8534; Price Waterhouse: (800) 792-7856.

The **ATM Forum** *will hold its Enterprise Network Roundtable (ENR) General Meeting at the* **NetWorld+Interop 95** *show in Atlanta on Sept. 26 from 8:30 a.m. to 11 a.m.*

NETWORLD+INTEROP

ENR comprises users from more than 145 member companies. Three Asynchronous Transfer Mode case studies will be presented at this free gathering, which is open to non-ENR members who preregister by Sept. 15.

ATM Forum: (415) 578-6860.

The **National Automated Clearing House Association (NACHA)** *will hold its Conference of Latin American Electronic Banking Nov. 9-10 in Miami. The* **conference** *is designed to assist bankers in setting up electronic payment networks with Latin American banks. Topics to be addressed include cross-border electronic funds transfer applications and discussions concerning governmental involvement in creating electronic payment networks.*

NACHA also renamed its annual conference to Payments, reflecting a shift in the event's focus from automated clearinghouse transactions to other forms of electronic payment.

The show will now cover such topics as electronic data interchange, electronic payments over the Internet and government regulations of electronic payment networks.

NACHA: (703) 742-9190.

Sanity checks keep nets under control

By Linda Musthaler

Most net managers spend a fair amount of time jumping from crisis to crisis, but the most successful ones make time to periodically step back from the fires and examine their strategic network direction.

You could find that network applications have not been architected so well, making it difficult for people to get their work done and adversely affecting the bottom line.

Or maybe calls to your help desk are on the rise as users, frustrated by ever-more befuddling network technologies, seek comfort. Worse yet, you may see call volume taking a drastic dip because users fear they'll get no aid whatsoever.

Rather than letting these pressures build up, isn't it time for a sanity check? Not to insinuate that you're going off your rocker, but if you're experiencing these types of problems, your network strategy may have gone bonkers.

Assessing your overall network strategy will help you to find gaps in your design and implementation, and to start identifying how to fill them. Even if you're not feeling squeezed, assessing your network strategy at least once every two years is prudent.

Frequently, many of the issues raised during a strategy sanity check can be addressed without significant changes. Sometimes all that's required is a little fine-tuning. The changes are often more organizational than technical.

To conduct a sanity check, you've got to assemble a team of people that has at least one neutral party who can question everything, challenge the status quo and bring new insight to your network's future direction.

The idea is to look for clues that your network strategy is in need of assessment and possible overhaul (see graphic).

A number of consulting firms, including my company, Currid & Co., follow a fairly standard methodology for looking at the issues. As you seek out a neutral party, think about the tasks you'll want accomplished.

The first is to acquire insight to the problems. Key IS and networking staff must be interviewed to learn about the basic strategy and be brought up-to-date on any perceived or real problem areas.

Additional interviews with end users often reveal problems that IS and networking staff never knew they had. For example, end-user interviews we conducted for a client uncovered the fact that an entire department used just one logon ID, a significant security breach. The reason? IS often refused requests for new IDs, thinking that limiting the number of IDs would help control network usage. Workers, meanwhile, just wanted to get their jobs done and found an adequate way to work around their lack of individual IDs.

Next, allow the neutral party to acquire as much information as necessary about the network: configuration, usage statistics, response times and the like.

The organization that has been built to support the network must also be examined. As my company completes this phase, we focus on collecting data in areas where our interviews have identified problems.

The company's business requirements must also be analyzed to determine how any planned shifts will affect the network's current and future use. The earlier you can plan for the future, the quicker you can respond when the time comes.

Now it's time to investigate alternative solutions, which can be ranked in terms of viability and cost. How these solutions affect the organizational model must also be weighed.

For instance, we suggested that a client convert database applications from a monolithic, centralized processing model to a client/server platform. Making the change would be no easy task. While this alternative would provide numerous business benefits, it would also require retraining staff or hiring someone to head up the development effort. And that's not to mention the effort it would take to retrain workers who are comfortable with existing applications.

Just as every job has its pressures, every network has its problems. Getting a periodic objective point of view can help you keep your network on track.

Musthaler is vice president of research at Currid & Co., a Houston-based technology consulting firm. She can be reached via the Internet at musthaler@ngwgate.mhs.compuserve.com or by phone at (713) 789-5995.

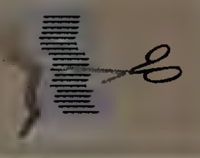
It's time for a network sanity check when . . .

▼ **Business isn't better.**
It's time for a change if workers get upset that recurring network problems prohibit them from completing tasks or if they keep hearing the net can't accommodate more services and applications.

▼ **Uncoordination strikes.**
A revamped network strategy is clearly called for should you discover the group of LANs you manage was installed with little or no coordination and a disregard for how they would be interconnected in the future.

▼ **No one's at their service.**
Changes need to be made when you start piling up a poor service and support track record because outdated network management or help desk tools aren't solving today's problems, or administrative procedures require users to jump through hoops for even the simplest things, such as getting a new user ID.

▼ **Components list is an arm's length.**
One thing that will keep your net sane is to shorten the list of hardware and software products it will support, thus simplifying its standard configuration and making it easier to manage.



MANAGEMENT DATA ON-LINE

Network World peruses on-line services looking for interesting hints or tools that will make your job easier. Here are a few:

Outsourcing outlined

Managers thinking of outsourcing some or all of their network operations should visit BRP Publications, Inc.'s World-Wide Web site, which has an article on the topic. Written by Ronald Brown, an independent networking and communications management consultant, the article describes how outsourcing and reengineering can be combined. Point your Web browser at http://apt.org/brp/cornerrb.html.

Reengineering test

Speaking of reengineering, would you say that reengineering stops once you've put an electronic data interchange program in place with your trading partners? If so, you may want to take a 10-question test designed to help overcome some common misperceptions concerning what reengineering is all about. Download the "Reengineering: It's Not Business as Usual" file from the EDI/E-mail/Workflow Library in CompuServe's Office Automation Forum.

Standard stuff

To keep up-to-date on the development of international standards, visit the International Telecommunication Union's Web site, which provides links to documents that spell out ITU standards and recommendations. Point your Web browser at http://www.itu.ch.

Virus attacker

A new version of the F-PROT virus scanning program, F-PROT 2.18e, is available in the National Computer Security Association's Security Vendor Forum on CompuServe. The virus scanner is combined with a disinfection program and a resident monitoring program.

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Please send or FAX your resume including salary history to: Entergy Services, Inc., Human Resources, P.O. Box 61000, New Orleans, LA 70161; FAX: 504-576-4428. No phone calls please. PRINCIPALS ONLY. An Equal Opportunity Employer. M/F/D/V. You will not be contacted unless you are considered for an interview.

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229	230	231	232	233	234
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247	248	249	250	251	252
253	254	255	256	257	258
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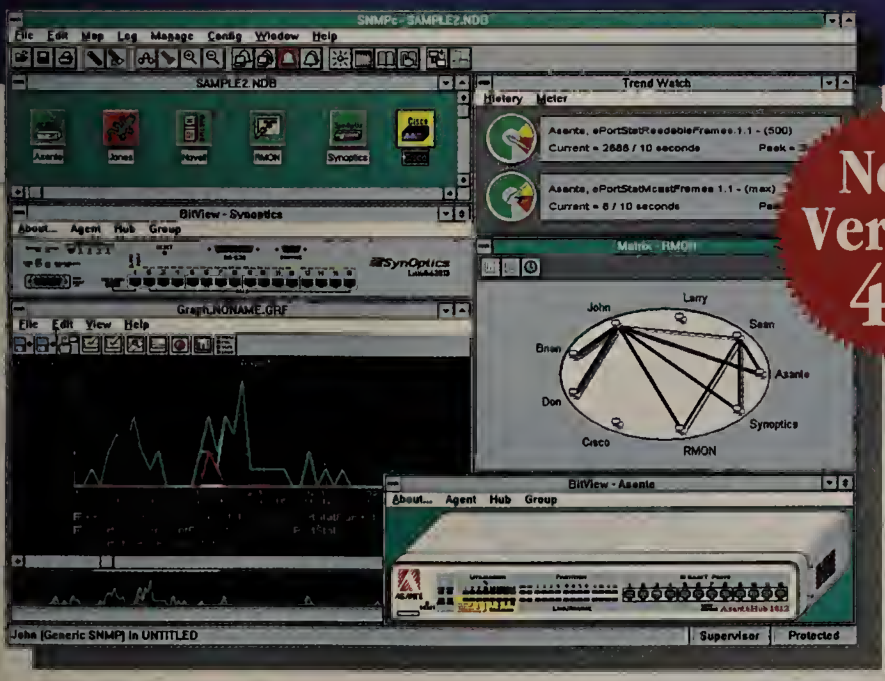

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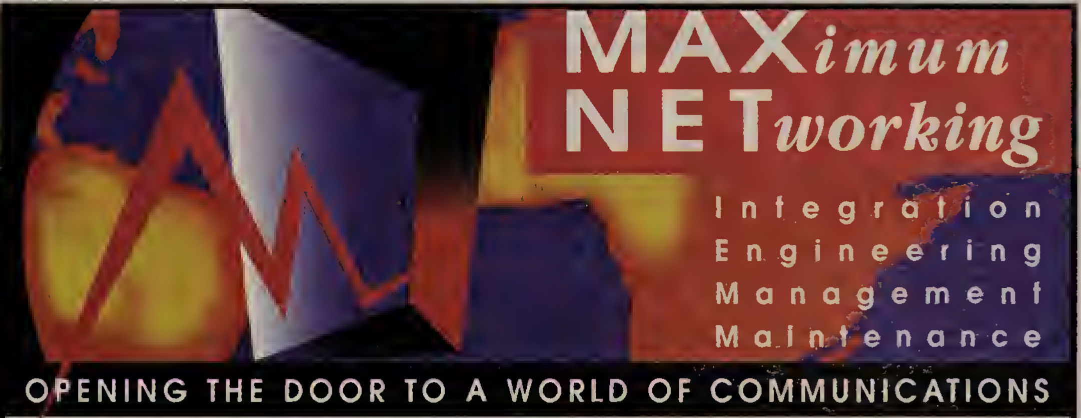

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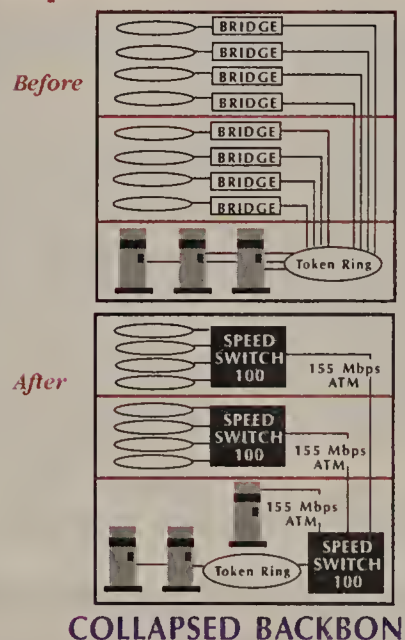

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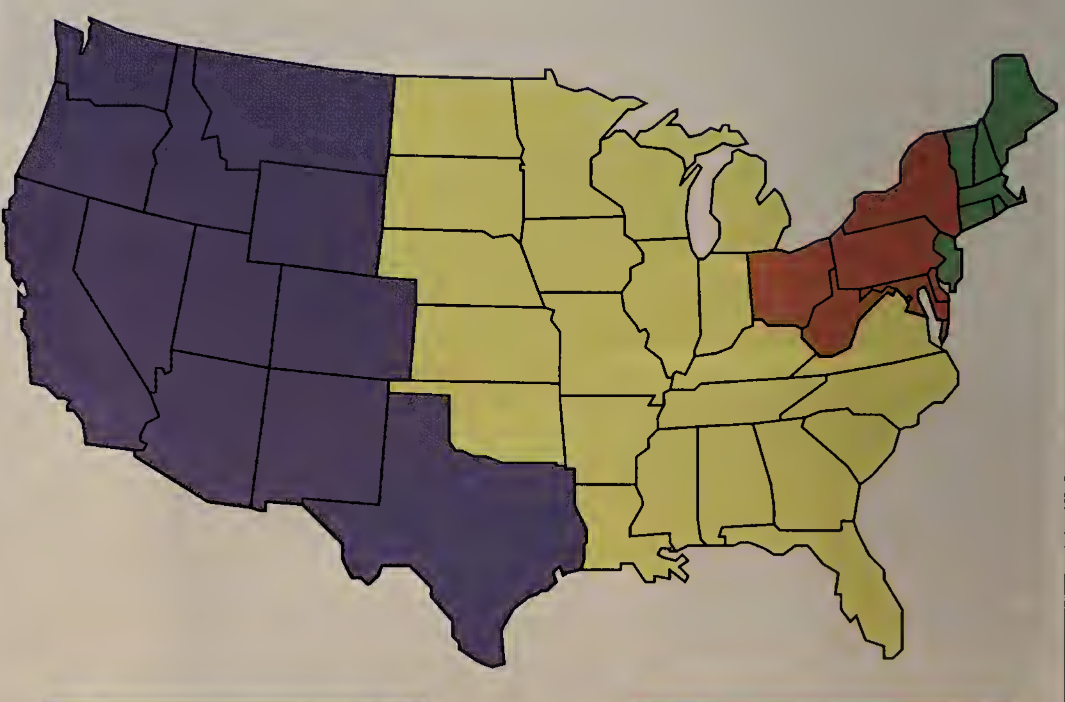

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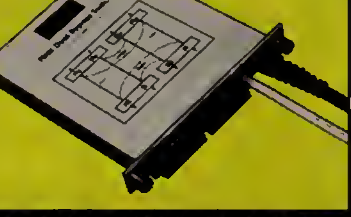

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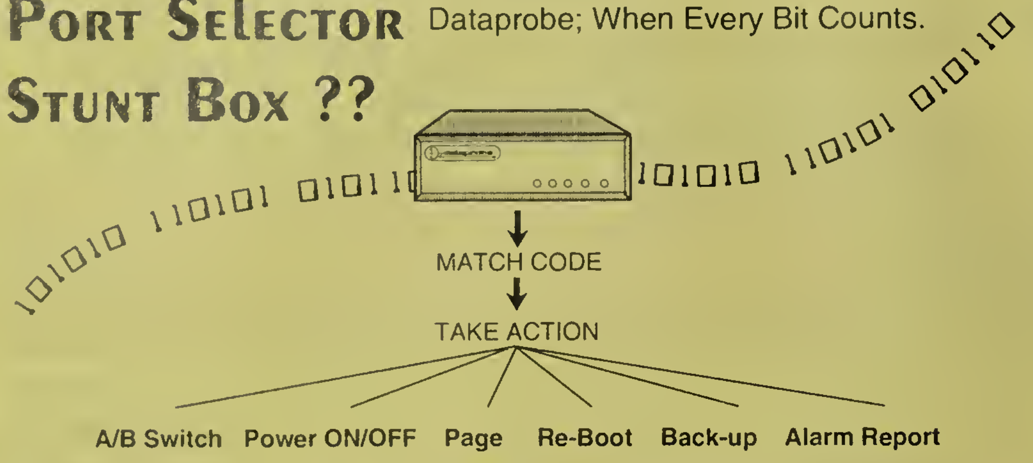

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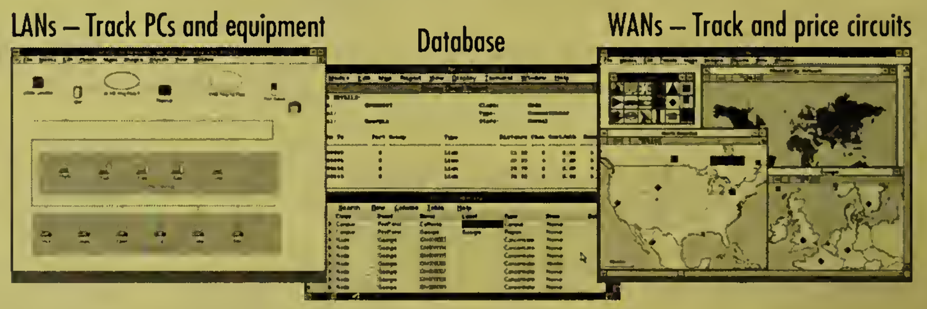
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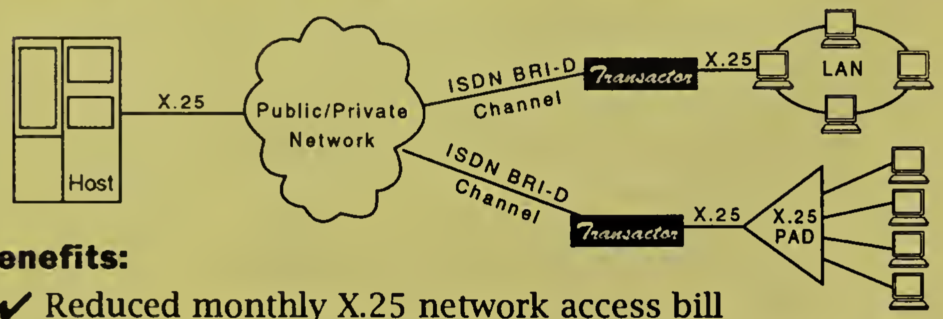

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- ☐ **LANSource Technologies**
  WINPort
- ☐ **Locus Computing**
  Internet Productivity Tool
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  1. Windows NT Server
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  Wireless E-Mail
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  GrafBASE Demo
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  1. Network CD-Rom Server
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  Team Talk
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  NetDirector Demo

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NetworkWorld's Editorial Index

3Com 25

A

Apple 28

Ascom Timeplex 6

Aspect 6

AT&T 1,6,13,20

B

Banyan 1

Bay Networks 25

C

Cabletron 1

E

Ericsson 20

G

General DataComm 6

Grand Junction 25

I

IBM 1,32,43,44,58

L

LANNET 25

Livingston 13

Lotus 1,32

M

MasterCard International 35

MCI 1,20

MFS Communications 20

Micom 8

Micro Focus 32

Microsoft 1,12,40,41,43,57

N

NBase 25

Network Equipment Technologies 6

Newbridge 6,12

NeXT 12

Novell 1,58

NYNEX 20

R

Racal-Datacom 6

S

Sprint 20

StrataCom 6

T

Teleport Communications Group 20

Tivoli 12

U

UB Networks, Inc 8

V

Visa International 35

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NetworkWorld's Advertiser Index

ADVERTISER	READER SERVICE#	PAGE#
3Com Corp		**10-11,22-23**
ABC Telecommunications		50
Bruno Blenheim/DB Expo		**56**
Castle Rock Computing	252	49
Cisco Systems		**2-3**
CNT/Brixton Systems Inc	109	53
Compaq Computer Corp		**14-15**
Cylink Corp	113	54
Dataprobe	110	54
Hewlett-Packard		**7,24**
MaxNET	267	49
Microsoft Corp		**30-31**
Microtronix	111	54
NEC		**9**
NetSoft		**17**
Network Dimensions Inc	112	54
Newbridge Networks Inc		**60**
NORTEL		**16**
Novell Inc		**26-27**
Optical Data Systems		**4**
Racal Datacom		**18-19**
Softbank Expos		**42**
Sun Microsystems Inc		**34**
TGV		50
Xyplex Inc		**36**

Regional/Demographic

Ads appear in selected issues only.

Adtran		**21**
Microsoft Corp		**21**

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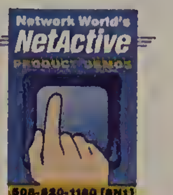

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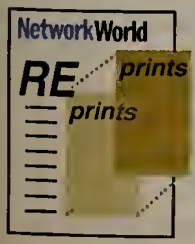

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Tivoli

Continued from page 12

to remote systems. It recognizes different system types and automatically dispatches procedures specific to each type, Tivoli said.

The event routing capability enables users at multiple sites to collaborate in managing the entire enterprise. T/EC servers in remote locations, for example, can share event information with each other and with a server at the data center to cooperatively manage distributed and local systems.

The event routing capability also allows T/EC servers to back each other up.

"It's clear that they are targeting large-scale, distributed environments," said Paul Mason, research manager for enterprise systems management at International Data Corp. in Framingham, Mass.

T/EC 2.5 costs $65,000 and will be available in the fourth quarter.

©Tivoli: (512) 794-9070.

NeXT

Continued from page 12

are building links between Web pages and back-end processes to enable electronic commerce, it will appeal primarily to NeXT's current customers, said John Rymer, an analyst with Patricia Seybold Group, Inc. in Boston.

Alternatives to Microsoft and Digital will have wider appeal, Rymer said. Digital, which is helping Microsoft build distributed object technology, last week at Object World demonstrated an unnamed, unannounced product to link Web pages to CORBA-compliant back ends.

"There's clearly a need for something like this," said Jerry Michalski, managing editor of "Release 1.0," a New York-based industry newsletter. "People writing code for the 'Net are writing in a number of different languages. But with a well-designed environment, you could just buy software modules and plug them in."

NeXT is also porting the object technology it developed for its own NeXT operating system to Windows 95 and Windows NT. Called OpenStep for Windows, the system is expected to ship in mid-1996.

Senior Editor Kevin Fogarty contributed to this article.

Spectrum

Continued from page 1

dor," according to Tim Wilson, senior consultant at Decisis, Inc. in Herndon, Va., referring to Cabletron competitors IBM, Hewlett-Packard Co. and SunSoft, Inc.

"But the success or failure of Spectrum will be determined by how many third parties Cabletron can get to follow in its footsteps," something the systems vendors have been largely successful at, he said.

New application

For its part, Cabletron will roll out an application for managing Novell, Inc. NetWare servers that does not require the use of a NetWare Loadable Module on the server.

Cabletron claims this implementation, called Management Gateway Server, is unique in the industry, sources said.

"We couldn't find a platform that could manage servers well," said Jeff Ballard, LAN/WAN specialist at Central Maine Power Co. in Augusta. "We were going to compromise and find a good manager for NetWare and use it separate from Spectrum because if you tried to launch it all from one [platform] it really didn't do what want we wanted."

As a result, Central Maine Power still has not deployed a server management product, but Ballard said his company might take a look at the new Cabletron offering.

Configuration monitoring

Cabletron will also unveil a so-called Host Management Information Base for monitoring the hardware configurations of Unix and Windows NT servers from a Spectrum console.

The applications will be available no later than the first quarter of 1996, the sources said. Cabletron declined comment.

Among the enhanced products from existing Cabletron partners is Calypso's Atrium EMS for Spectrum, which distributes software to and manages the configuration of Windows 95, Windows NT, NetWare and Unix clients and servers.

Also, Metrix's WinWatch product will bring integrated software distribution capability to Spectrum, according to sources. ■

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BLENHEIM.

User survey

Net managers ready to board Win95 train

By Peggy Watt and Michael Csenger
Framingham, Mass.

Network managers say they will upgrade in significant numbers to Microsoft Corp.'s Windows 95 in the next 18 months, eager for the product's stability, 32-bit multitasking functions and other new features.

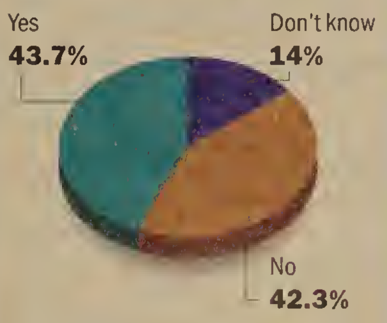
Microsoft should keep its manufacturing plants cranking (they're now churning out 1 million copies of Windows 95 each week) because timely upgrades are planned by a whopping 89.4% of 151 *Network World* readers surveyed via telephone last week by Focus Data, Inc. Only 10% expect to begin deployment immediately after Windows 95's release this week, but 19% expect to deploy it within six months and 28.5% more will within 12 months.

Windows 95's stability is a definite selling point for early adoption, said Mark Hawkins, network manager for Augusta Newsprint, Inc. in Augusta, Ga. The company plans to install Windows 95 on Windows NT and NetWare networks at several manufacturing sites.

"We've been testing Windows 95 for about six months, and we've found very few problems compared to Windows 3.1," Hawkins said. "Windows 3.1 is like a toy."

Oregon State University College of Business in Corvallis is committing to Windows 95 on its networks, largely because of the improved performance and stability, said Greg Scott, information services manager at the college.

DO YOU PLAN TO USE WINDOWS 95 PEER-TO-PEER NETWORKING?



Based on a survey of 151 users.

SOURCE: FOCUS DATA, FRAMINGHAM, MASS.

"The General Protection Fault and out-of-memory problems that were standard with Windows 3.1 have pretty much evaporated," he said. "One user had 15 major applications open and had reasonable system performance."

And the survey says . . .

Noteworthy among the survey responses was the indication of how much Windows NT has penetrated the corporate network. About 32% of respondents said they will attach their Windows 95 desktops to a Windows NT net, testifying to Microsoft's aggressive marketing and the increased acceptance of the Version 3.5 update released last year.

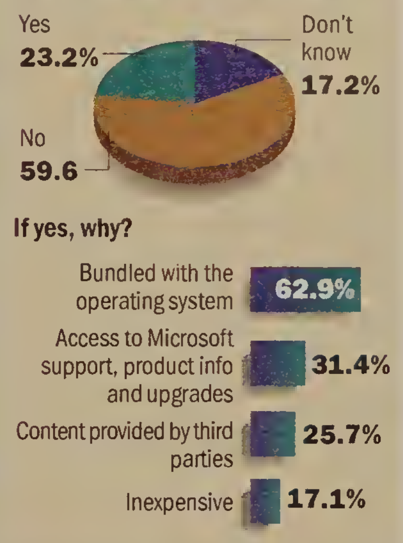
More than 27% of those asked said they will install Windows NT Server when they upgrade to Windows 95, but nearly twice that said they would not.

Some 26% of users said Windows 95 is attractive because of bundled extras. Among those is optional gateway access to The Microsoft Network (MSN), a new commercial on-line service. About 23% of the respondents said they will use MSN.

The fact that access to the on-line service will come bundled with Windows 95 was the primary reason 62% of the respondents said they were interested in trying MSN.

Just as Windows 95 will buy Microsoft some instant on-line service market share, the operating system will give Microsoft a boost in the electronic messaging market, as well. Just more than 27% of those surveyed said they expect to install the Microsoft Exchange electronic mail client that comes bundled with Windows 95. ■

DOES YOUR COMPANY PLAN TO USE THE MICROSOFT NETWORK?



SOURCE: FOCUS DATA, FRAMINGHAM, MASS.

Win95

Continued from page 1

among accessory programs. "Some users found they didn't have enough room on their hard drives for all the goodies they wanted," Olliff added.

Users get no such options at the equally smooth installation under way at Union Carbide Corp. in Danbury, Conn.

"We want a very standard desktop environment," said John Hetrick, director of the strategic client projects group for Vanstar Corp. of Pleasanton, Calif., a Microsoft Solutions Provider that is installing a 9,000-node Windows NT and Windows 95 network at multiple Union Carbide sites across North America.

All data sits on the servers, and all the desktops have Compaq Computer Corp. systems running Windows 95 and Office 95. Hetrick's team has deployed about 200 nodes so far.

"These are business computing facilities. There is no customization of desktop or applications," he said. "It's a universal desktop design."

Hetrick's team wrote installation scripts that are triggered from each desktop, so the software is pulled off the server and deployed on the node.

He was leery of using a beta version of SMS, and the release that supports Windows 95 did not ship until last week. However, he might use it in future installations.

Upgrade glitches

The only pain Hetrick expects end users to experience is in dealing with end users in other departments who have not yet switched over to Windows 95.

"We've got some workarounds to accommodate the long file names and to translate file formats," he said. "There's some growing pains, but we're working through the departments as quickly as possible."

What to watch for with Windows 95

The pioneer's guide to not-so-obvious trouble spots

- Check out readme.txt for last-minute info.
- Be aware of hard-disk space available on all target desktops.
- Make a list of your hardware and peripherals; Windows 95's Plug-and-Play won't identify them all.
- Note memory addresses and interrupts of drivers and peripherals (especially network interface cards) for troubleshooting in case of conflicts.
- Check Microsoft's applications compatibility list; test custom applications yourself.
- Take inventory of your hardware and software – and plan any related upgrades – before you begin installing Windows 95.
- Minimize the diversity of your systems as much as possible; standardize on peripherals – it helps in troubleshooting.

He advised advance planning, careful standardization and thorough inventory of equipment to make the upgrade process as smooth as possible.

The expectation of future upgrades prompted staff at the Oregon State University College of Business in Corvallis to install Windows 95 on a handful of servers in addition to configuring 300 workstations to run the new operating system.

"Running Windows 95 on the server will really simplify the process of making changes," said Greg Scott, information services manager at the college. "I'll be able to load [changes] onto the server instead of touching 300 workstations."

The college has Windows 95 running on two Windows NT servers and has applications — including Office 95 — running on two other servers supporting 300 desktop nodes. However, the Windows 95 registry and other user information files run on the desktop, so his staff must still check each desktop configuration.

"We're doing about 10 seats a day," Scott said. At that rate, the work will be complete before school starts.

Scott said that over time, he expects he'll need to upgrade some of the hardware because of Windows 95's demands.

"One other thing we're finding about Windows 95 is that it's a bit more aggressive than Windows 3.X in the number of files it opens and dynamic linking that takes place," which draws on a system's memory, Scott said.

Overall, Scott said, "I'm very impressed. It's not everything that everybody wanted, but it's so much better than what we had. I wish it had been out a year earlier." ■

Banyan

Continued from page 1

expected early next year, should lead the battle for supremacy in the next-generation messaging and groupware market.

Adding support for MAPI to BeyondMail, which currently supports Banyan's Intelligent Messaging and Novell's Message Handling Service (MHS), could help build customer appeal outside the scope of VINES networks, said Mike Rothman, an analyst at META Group, Inc. in Reston, Va.

With MAPI, the de facto standard for LAN electronic mail interoperability, clients from multiple vendors could use some of the BeyondMail server functions, and BeyondMail clients could work with competing servers.

"BeyondMail has always had best-of-breed front-end functions; it was the back end that was the question," Rothman said. "The back-end functions are good, but you need MAPI support for any [customer] that's not an all-Banyan shop."

Adding support for MAPI to BeyondMail could help build customer appeal outside the scope of VINES networks, said Mike Rothman, an analyst at META Group.

By supporting both MAPI and the StreetTalk directory, BeyondMail may help create a demand for Banyan's Universal StreetTalk, a version of the directory that is independent of the company's networking products, analysts said.

BeyondMail's server-based rules engine is a step above the client-based engine in the current version, enabling the system to automatically sort and, if necessary, redistribute E-mail and other documents as they arrive without downloading to a client first.

Those capabilities, which will exist in Microsoft's Exchange and Novell's GroupWise XTD, make life easier for users by sorting mail continually and shuffling it into appropriate folders even when a user is on the road.

Users will be able to configure folders, as well. Messages within folders can be sorted according to sender, time sent or other variables, according to sources.

In addition, the product should also make using workflow within BeyondMail easier. Banyan will ship prepackaged forms-based applications as well as a utility that gives users templates similar to forms built into Microsoft's Visual Basic development tool, and allows them to modify both the forms and rules, according to sources briefed about the product.

Users currently have to write rules and build forms separately using a proprietary language that ships with BeyondMail.

It was unclear whether the development utilities would be compatible with other applications built into Visual Basic. ■

VTAM

Continued from page 1

390 worldwide that we are looking to better integrate with client/server and distributed systems,'' said Nicholas Donofrio, IBM senior vice president and server group executive.

IBM said the VTAM enhancements would be spread out over the next year or so, but exact delivery dates have not been set.

These enhancements should also boost performance. According to Gary Burnette, manager of IBM's VTAM strategy, users could see at least a sixfold improvement in throughput with VTAM handling the TCP/IP flows into the mainframe.

''We want to bring the services and strengths VTAM brings to the SNA world to the multivendor TCP/IP domain,'' he said.

Bringing control of TCP/IP to VTAM, according to Burnette, should also ease session establishment with mainframe applications and let users more easily communicate with multiple applications simultaneously.

"There is over $1 trillion worth of software on the System/390 worldwide that we are looking to better integrate with client/server and distributed systems."

Users seem to agree. ''The idea of using VTAM services to control TCP/IP makes sense because then we'd be able to take advantage of other services that VTAM enables such as network management,'' said John Harrington, data center manager at the Madison Gas & Electric utility in Wisconsin.

Burnette said that more than 50% of its MVS mainframes now run TCP/IP and the number is growing. Currently, TCP/IP for MVS — IBM's mainframe-based TCP/IP software — does not invoke VTAM, which in some cases has lead to poor performance and wasted expensive mainframe cycles.

IBM and others have tried to remedy this with TCP/IP offload devices, such as IBM's 3172 Interconnect Controller or Cisco Systems, Inc.'s Channel Interface Processor for the 7000 router, which take most of the TCP/IP communications processing off the mainframe.

Looking to improve bulk data throughput, Burnette said IBM was working on a high-speed or Fast Path programming interface that would improve data transfer rates between the mainframe and downstream 3270, LU 6.2 or TCP/IP-based workstations by up to six times.

VTAM is also a central component of IBM's new parallel processing S/390 Parallel Sysplex hosts. Announced last summer, these low-cost, microprocessor-based parallel processing mainframes are IBM's strategic future superservers for large nets.

In the Parallel Sysplex environment, VTAM will control access to applications distributed across multiple processors. It also uses the dynamic topology, directory and routing services of IBM's Advanced Peer-to-Peer Networking technology to automatically find resources, regardless of their location across distributed processors.

To this environment, IBM will bring support for APPN's High Performance Routing, which controls congestion, enables data to flow around failed devices and brings up to a tenfold performance improvement. These will be crucial enhancements as users expand the number of processors in the Sysplex environment, Burnette said.

One user said his biggest concern about the IBM VTAM plans is cost. His firm spends about $12,000 a month in leasing and service fees for VTAM, and incurring added VTAM costs to handle TCP/IP communications did not sit well.

''IBM has to explain and justify costs a lot better than it has in the past,'' he said. ■

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IBM takes over Novell's SNA gateway

It's all over but the crying.

After months of speculation, IBM last week bought Novell, Inc.'s NetWare for SAA gateway business — giving Big Blue the industry's leading LAN-to-SNA gateway but in the process buying a positioning headache for its own OS/2 Communications Manager gateway.

Sources close to the negotiations said the companies closed the deal late last week and that Novell employees had been notified Thursday of the platform's sale. Under terms of the deal, IBM will take over future development of the NetWare for SAA package, but both companies will market the product. IBM and Novell declined to comment. NetWare for SAA connects NetWare LAN devices with IBM mainframe-based Systems Network Architecture applications. IBM's Communications Manager/2, however, can perform the same function.

''Given IBM's Communications Manager, I'd classify this deal as curious,'' said Anura Guruge, an independent analyst based in New Ipswich, N.H. ''While IBM gets the leading SNA gateway product and its multimillion-dollar revenue stream, it now has competing gateways.''

The deal also indicates that Novell has given up on future LAN-to-host connectivity products and solidifies the market perception that NetWare for SAA support inside Novell has been declining for months.

''A lot of people see the world as either SNA or TCP/IP. If Novell sees the world as primarily TCP/IP, [selling off NetWare for SAA] would make sense,'' said one observer.

Independent software vendors that work with the product should be relieved that IBM is taking over development since Novell has shown no interest in developing NetWare for SAA beyond its present form, said one Novell developer who requested anonymity.

By Michael Cooney and Kevin Fogarty

IVPN

Continued from page 1

Uniworld, a joint venture between AT&T and the Unisource consortium of four European national carriers.

Uniworld IVPN essentially will extend across Europe many features of AT&T's popular Software-Defined Network — not only for calls between the U.S. and overseas locations, but also between European offices.

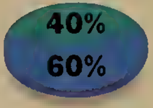
''It will be a fully feature-capable virtual net service,'' said John Foster, former chief of AT&T's European operations and now Uniworld's chief operating officer at its headquarters here.

The announcement of Uniworld IVPN will come nearly a year after the launch of Concert Virtual Network Services (Concert VNS) from the global joint venture of MCI Communications Corp. and British Telecommunications plc. And Concert officials last week told *Network World* that within 45 days they will be offering new data networking features for Concert VNS users.

The consortium is currently beta-testing a dial-up 64K bit/sec multinational data service, which is analogous to switched 56K bit/sec services in the U.S., said Nancy Gofus, Concert's senior vice president for product management in Reston, Va. By inverse-multiplexing 64K bit/sec channels, users will be able to employ the new service for applications such as videoconferencing, added Ian Landy, Concert VNS product manager.

Uniworld members

- ▶ AT&T
- ▶ PTT Telecom Netherlands
- ▶ Swiss Telecom PTT
- ▶ Telefonica of Spain
- ▶ Telia of Sweden



AT&T owns 40% of the venture, with the four European carriers sharing the remaining 60% through their Unisource consortium.

Carriers and analysts caution users not to expect international virtual net services to be carbon copies of domestic services. The choice of access options can be severely limited by European regulatory constraints, typically forcing users to obtain expensive dedicated access lines to what may be distant carrier points of presence.

In Uniworld's case, Foster explained, Ericsson switches have been placed in each of the four European partners' countries and an AT&T 5ESS switch in London.

But in most other European countries, where monopolies control basic switched telephony, Uniworld will collect traffic using deregulated customer premises equipment, such as large Ericsson BMX or AT&T Definity private branch exchange systems, Foster said.

The PBXs will be connected to user sites and the Uniworld backbone network through private lines purchased from the national carriers, Foster said. In some cases, he added, the consortium will attempt to use ISDN access, which is widely available in Europe.

Another key limitation: Calls placed from remote sites to off-net locations will have to be charged at typically expensive direct-dial rates instead of at IVPN rates. That's because most European governments require competitive offerings to be available only under so-called closed user groups, where one or both ends of a telecommunications connection must be part of a predefined group of users.

The Uniworld offering must adhere especially closely to these restrictions because the joint venture has not received final approval from the European Union's competition commissioner in Brussels, Belgium. The IVPN offering will be made under a limited exception granted last year to AT&T to enable it to join with Unisource in winning a pan-European contract for the European VPN Users Association, which includes such U.S.-based firms as Xerox Corp. and 3M Corp. ■

Back to Reality

Phone numbers are forcing users into needless complexity

Numbers rule our lives.

Good numbers, like those on a winning Lotto ticket, make us feel happy. Bad numbers, such as those on tax bills, make us sad. Drag your feet on a number like that and you will go to jail, then feel mad.

Numbers pervade everything. Religion, for instance, tallies good deeds and bad — the sum sends you to heaven or hell. Sex also is a numbers game: High numbers are OK if you're not married and are bad for the betrothed.

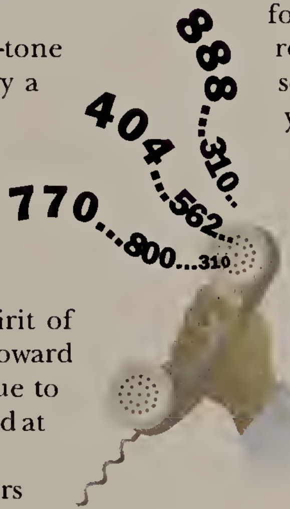
David J. Buerger

Technology also lives and dies by numbers. Mainframe programmers are bracing for a nasty scene when COBOL applications try to compute transactions for the year 2000. Network managers wonder how they'll manage fallout from lemmings who rush to Windows 95. And telephony managers, they're nervous about phone numbers.

Down for the count

The use of Mr. Bell's invention has been heretofore painless for Joe and Suzy American. Want to dial a friend? Punch in seven simple numbers and you're there. The 3+4 format is ingrained on everyone's psyche because that's the way God intended it.

(God obviously did not presage touch-tone dialing because phone companies still levy a surcharge for that feature. What would they do if we demanded rotary service? Drop the surcharge?)


888...310...
404...562...
770...800...310

The simplicity of the North American telephone numbering plan, however, is quickly turning into a quagmire.

John Kenneth Galbraith caught the spirit of this problem when he said, "The drive toward complex technical achievement offers a clue to why the U.S. is good at space gadgetry and bad at slum problems."

People are snapping up phone numbers faster than ever. The numbers-per-capita ratio is rising, thanks to facsimile machines, pagers, data lines, direct inward dial trunks and talkative teenagers.

When a Numbering Plan Area (technobabble for an area code region) exhausts its supply of phone numbers, the phone company can create either an overlay or a split.

An overlay is a separate network for areas running short on phone numbers. A split means what it says: Part of the region keeps the old area code, the other gets a new one.

Local and state governments, as well as regional Bell operating companies, prefer splits to overlays. A split means customers have to dial four extra numbers to call people in their region.

Simply put, splits eventually force people to pay more for local telephone service.

Although often more expensive, splits used to be painless; they simply involved programming in new area codes. Now, however, many new area codes have numbers other than a 1 or 0 in the middle, which has wrought much pain in userland.

In Atlanta, the old 404 region was split this month. Like me, people outside Atlanta's perimeter now use 770.

The trouble is, most of my customers' switches were not programmed for the new numbers. I guess they'll get to pay for a software upgrade.

Thank goodness 404 still works through November. I wonder if the phone company will reimburse me for lost business after that date? Not. Other costs that companies must incur are new business cards, stationery and promotional material.

Local splits are a step backward for users. People affected by a split have to consider where they are placing the call from before they dial the number.

Such calls can be painful. Make a mistake and you get to hear three ear-splitting tones. "We're sorry, your call cannot be completed as dialed." I feel better knowing Ma Bell is sorry. Her electronic apology makes me forget my stupidity.

The California PUC last week OK'd another split for the 310 Los Angeles area code, despite GTE's recommendation for an overlay. The 562 code is set for early 1997 — the second such split in five years. About two million people will again suffer the consequences.

Wrong solution

The telephone system used to do a great job staying out of sight. Nobody worried about phones except telecom managers. Hats off to the phone industry for fixing its spotless image. Now the whole country can worry together about number availability, proper area codes and regular upgrades to switching software.

Perhaps the phone industry took a queue from Microsoft. Most people didn't know what an operating system was a year ago. Now, the mainstream press advises people on upgrade strategies to Windows 95. Before you know it, neighborhood user groups will form to debate the performance of their local AT&T 5ESS switch.

Computers are notorious for wasting our time with software fixes and upgrades. Now we can look forward to similar distractions from the telephone system.

I used to point to the telephone industry as a role model for data networking vendors. Voice products were always simple to use.

I take it back. Technology is supposed to simplify life, yet phone companies are dealing numbers that make life harder.

Buerger is an Atlanta-based writer and industry consultant. He can be reached at dbuerger@pipeline.com.

A B E N D

abend *(n)* **1:** abnormal end to a computer process **2:** the column that spares no expense to bring you the insights of Internet users and other high-tech wits

Things to have new computer techs do:

(alt.sysadmin.recovery)

- Trace the piece of thin wire and look for the ether leaks.
- Make up more tokens for the Token-Ring network.
- Sweep behind the router for all those dropped packets.
- Disinfect the bad spots on this hard drive.

Only a coincidence?

(rec.humor.funny)

It's August, and two new consumer products are becoming generally available for the first time this month:

- **Windows 95 — the new operating system from Microsoft**
- **Tagamet — the (formerly prescription) heartburn and ulcer drug**

This just in...

Two weeks ago, we reported the sad saga of the concrete hippo kidnapped in North Carolina. Happily, the hippo was found one morning back in its accustomed perch.

Wile E. Coyote vs. Acme Co.

(alt.animation)

Mr. Coyote states that on 85 separate occasions, he has purchased of the Acme Co. (hereinafter called "Defendant"), through that company's mail-order department, certain products that did cause him bodily injury due to defects in manufacture or improper cautionary labeling. Sales slips made out to Mr. Coyote as proof of purchase are at present in the possession of the court marked Exhibit A. Such injuries sustained by Mr. Coyote have temporarily restricted his ability to make a living in his profession of predator. Mr. Coyote is self-employed and, thus, not eligible for workmen's compensation.

As the court is no doubt aware, Defendant has a virtual monopoly of manufacture and sale of goods required by Mr. Coyote's work. It is our contention that Defendant has used its market advantage to the detriment of the consumer of such specialized products as itching powder, giant kites, Burmese tiger traps, anvils and 200-foot-long rubber bands. Much as he has come to mistrust Defendant's products, Mr. Coyote has no other domestic source of supply to which to turn.

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